
PHILOSOPHICAL TRANSACTIONS.

For the Month of April, 1698.

Carigueya, seu Marfupiale Americanum.

O R,

The Anatomy of an Opossum, dissected at Gresham-College by Edw. Tyson, M. D. Fellow of the College of Physicians, and of the Royal Society, and Reader of Anatomy at the Chyrurgeons-Hall, in London.

THIS *Animal* was brought from *Virginia*, and presented to the *Royal Society*, by *Will. Bird*, Esq; and kept alive in their Repository for some time. But of late languishing and falling from its Meat, it died. The Cause of its Death we shall see, when we come to the Dissection: But first of all, we shall take notice of the several Names given it by different Authors: Then shall give a more exact Description and Figure of its outward Shape: And last of all, we shall observe the Structure and Formation of the Parts within; especially where different from other Animals.

R

And

And as to the *Names*, I find that *Georg. Margravius* (a), and so likewise *Gul. Piso* (b) tells us, That 'tis called in *Brasile*, and on the Sea Coasts *Carigüeya*; by some, and in the In-land Contries, *Impatiima*. In *Periquay*, *Tai-ibi*. *Franc. Hernandez* (c) saith, 'Tis called, *Tlaquatzin*, by the Indians. *Antonius Herera* calls it *Taquatzin*; and the Modern Spaniards, by a Corruption, *Tlaquacum*; as *Joh. Euseb. Nierembergius* (d) informs us. *Joh. Per. Maffei* (e), and *Caspar Barlaeus* (f) calls it, *Cerigo*. *Joh. Leri* (g) calls it *Sarigoy* or *Carigoy*. *Joh. Stadenius* (h) or *Stadius*, as he is Printed in *Theodore de Bry*, writes it, *Servoy* or *Serwoy*. By *Cardan* (i), and *Oviedo* (k) 'tis called *Chiurca* & alibi *Chucia*. In the *Molucca* Islands 'tis called, *Zurca*. In *Virginia*, and generally by the English, 'tis called *Opossum*, as by *Ralp Hamor* (l), and others. *Joh. de Laet* (m), and Captain *John Smith* (n) writes it, *Opossum*. *Mr. Ray* (o) calls it, the *Possum*; as do also our common Seamen. I do not find any *Latin* Name given to it by any Body, but by *Gesner* (p), who, that it might not be *Anonymous*, forms that of *Semi Vulpa*, quasi *Simia Vulpina*; or, as *Aldrovandus* (q) calls it, *Vulpi-Simia*, as if this Animal was of a middle Nature, between a *Fox* and *Ape*: And, answerably, in *Greek* it

N. B. In my Quotations of any Author, if what occurs be in the same Book and Place, I always refer to the first Letter 'tis quoted by; if otherwise, 'tis distinguished by different Letters, which I choose, to avoid needless Multiplication of References.

(a) Hist. Nat. Brasil. l. 6. cap. 2. p. 222. (b) Hist. Nat. & Med. l. 5. c. 24. p. 323. (c) Hist. Mexican. l. 9. c. 18. p. 330. (d) Hist. Nat. lib. 9. c. 4. p. 156. (e) Hist. Indic. l. 2. p. m. 46. (f) Res Gestæ sub Mauritio in Brasilia p. m. 222. (g) Hist. Navigat. in Brasiliam, c. 9. p. m. 180. (h) Hist. Brasiliænæ. Cap. 32. p. m. 129. (i) De Subtilitat. l. x. Oper. Tom. 3. p. 531. (k) In Summario Indiæ Occident. (l) Descript. Virginie (m) Descriptio Indiæ Occident. l. 3. c. 17. p. 82. (n) Voyages and Discoveries in Virginia. p. 27. (o) Synopsis Animal. p. 182. (p) Hist. Anim. de Quadruped. p. 870. (q) De Quadruped. Digit. Viviparis, l. 2. c. 4. p. 223.

might

might be called, Πιθηκολώπις, or Ἀλωπεκοπίθηκος; though he tells us, That the *Alopecopithecus* and *Chiurea*, by *Cardan* and *Scaliger*, are taken to be different Animals.

Upon the whole, since it is an Animal *sui Generis*, and in several Parts having a great Resemblance to those of different *Species*; I think, a *Denomination* might be best given to it, from that Particular, wherein 'tis most distinguished from all others; which is that remarkable *Pouch* or *Marsupium* it has in the *Belly*; into which, upon any Occasion of Danger, it can receive its Young. Not that it is a *Uterus*, or the Young Ones are bred there (this Mistake we shall clear up, when we come to the Dissection): But Nature has only formed this Part for that Particular *Use* of receiving or emitting, at Pleasure, the Young Brood, till such time as they are able to provide better for themselves.

This Consideration (it being so distinguishing a Character of this Animal from all others, that as yet we know of,) makes me most inclinable to find out some Name, that might be most expressive thereof; nor can I think of, at present, a better, than to call it, *Marsupiale Americanum*. If upon Observation (as very likely) there should be found different Species of these *Animalia Crumenata*, as *Jul. Cæs. Scaliger* (*r*) calls them, by an Epithite, they may be subdivided.

Bishop *Wilkins* (*s*), and Mr. *Ray* (*o*) too, in his *Synopsis Animalium*, places this Animal amongst the *Dog-Kind*. *Guil. Piso* (*b*) saith 'tis, "*Bestiola majorum Glirium Montanorum numero ascribenda* : And *Cardan* saith (*i*), "*Mittit & India Occidentalis Chiurcham è Mustelino Genere*. I am apt to think it may be reduced to the

(*r*) De Subtilitate ad Cardan. Exerc. 206. p. m. 277. (*s*) Real Character, Part 2. c. 5. p. 159.

Vermine Kind; but that may be better determinated, had one an Opportunity of observing the *Male*; for our Subject was a *Female*, which I am now to give a Description of.

And for the better doing this, I caused a Figure †† *Fig. 1.*
of it to be made, exact from the Life: for those *Figures* that hitherto have been given of it, are very faulty; as will appear by comparing this with that of the *Caragueya* of *Margrave* (*a*), which is copied by *Piso* (*b*) and *Johnson* (*t*). The *Figure* of *Job. Euseb. Nierembergius* (*d*) indeed, seems to be taken from the Life, and more agreeable; but not in all Particulars exact. That in *Gesner* (*p*) is altogether Monstrous; but withal, he tells us whence he had it; “*Imaginem addedi; qualis in Tabulis Geographicis depingi solet*; and mistrusts it himself, where he saith, & *Icon si quid ei credendum*. However, *Johnston* (who never fails to copy an Error, and never mends one) adds this Figure too, *vid. ejusd. Tab. 58.* though he owns that he had seen that of *Nierembergius*. The Figure of *Ulyss. Aldrovandus* (*q*) is much the same with that of *Gesner*’s.

Should one here indulge the Imagination so far, as in the Description of this Animal, to borrow its several *Parts* from those of different *Species*; one should rather seem to form a Chimerical *Monster*, than to describe a real *Animal*. Yet we find the best *Zoographers* thus to please themselves in their Accounts of it.

Animal est Tlaquatzin Canis parvi formâ & magnitudine, saith *Hernandez* (*c*). *Animal est Catuli vel Medicris felis magnitudine*, as *Margrave* (*a*). *Pars anterior Vulpem, posterior verò Simiam representabat, nisi quòd Pedes effingit Humanos, Aures autem habet Noctue*, saith

(*t*) Hist. Animal Quadruped. Tab. 63.

Vincentius Pinzonus (u). *Monstrosum illud Animal Vulpino Rostro, Cercopithecæ Caudâ, Vespertilionis Auribus, Manibus Humanis, Pedibus Simiam æmulans*, saith *Peter Martyr* (w). *Corpore verò ac Pedibus Melis*, the *Mexican History* (c). *Videtur autem hoc Animal intermedium esse inter Leporem ac Vulpem, sed alterius generis ab utroque ob Crumenam*, saith *Cardan* (x). *Est Viverræ facie ac magnitudine, Capite Vulpino*, saith *Jul. Cas. Scalliger* (r). *Opassum Capite Porcellum, Cauda Glirem referens, Mole modicum Felem*, saith *Joh. de Laet* (m). *Barbam Felinam habet*, saith *Piso* (b). *Cauda Colubrinæ similis*, *Hernandez* (c). I shall omit more Instances which might be given. Nor is it that I do disapprove of these Allusions upon the whole; but when they call it *Animal Monstrosum*, as *P. Martyr* (w); or *Prodigiosum*, as *Vinc. Pinzonus* (u), and *Hieron. Benzon.* (y); I think 'tis only our *Ignorance* makes the *Admiration*, and that *Admiration* forms the *Monster*; for *Nature*, in her regular Actings, produces no such *Species* of Animals.

In our Description of this *Animal*, we will first give the Dimensions of this we dissected; and then proceed to other Particulars. As from the Extremity of the *Nose*, to the Tip of the *Tail*, it measured One and Thirtty Inches: The Length of the *Head* was Six Inches: The *Tail* was One Foot long: The *Neck* and the *Body* was the Complement of the First Dimension: The Girth of the *Body*, now dead, was Fifteen Inches and an Half; when alive and well, it seemed much thicker: The *Fore-Legs* were Six Inches long; the *Hinder-Legs* but Four Inches and an Half: The Girth of the *Tail*, near the Root, was Three Inches; near the Tip but One Inch:

(u) *Navigatio inter Novi Orbis Scriptr.* p. 86. (w) *Ocean Decad.* 1. lib. 9.
 (x) *De Rerum Varietate, Cap.* 33. p. m. 101. (y) *Hieron. Benzon. Hist. Novi Orbis, Lib.* 2. p. 52. apud *Theodor. de Bry Americ. pars quinta.*

The *Head*, about the *Ears* was largest ; measuring on the *Forehead*, from one *Ear* to the other, Three Inches ; thence gradually tapering towards the *Nose*, and more resembling that of a *Pig* than a *Fox* : The Aperture of the *Eyelids* were not Horizontal, but lying in a strait Line from the *Ears* to the *Nose*, and not large : The *Ears* were about One Inch and an Half long ; not sharp, but of a roundish Figure : The *Rictus* of his *Mouth*, from the Corner on One Side, to the End of the *Nose*, measured Two Inches and an Half.

These Measures, in several Particulars, I find different from those in other Authors : But I cannot but think they have made several Mistakes, for want of a more exact Enquiry and Observation. Thus *Margrave* (a), and, from him, others makes the *Fore-Legs* shorter than the *Hinder* ; “ *Crura duo anteriora* (saith he) *breviora, nimirum quodlibet tres digitos longum ; Posteriora paulo plus quatuor* : In our Subject I find the contrary ; tho’, as we shall observe in the *Skeleton*, the Bones of the *Fore-Legs* are shorter than those of the *Hinder*. He adds, “ *Pedes Anteriores quinque digitis Instar manus constant, unguibus albis instar Avium, Curvis : Posteriores longiores, uti in Cercopithecis esse solent, item quinque digitis ut manus*. But here we find the *Fore-Feet* to have Five long Claws or *Fingers*, equally ranging with one another ; and a hooked *Nail* at the End of each Finger. But the *Hinder-Legs* are far differently formed ; for here we observe but *Four Fingers* armed with hooked *Nails*, and a perfect *Thumb*, set off at a Distance from the Range of the other Fingers ; and as in a *Humane* Body, this *Thumb* was shorter than the other Fingers ; and had not a hooked or curved prominent *Nail*, but a tender flat one, as in our || Figure is represented.

|| Tab.
Fig. 1.

This

This Contrivance of the Feet and the Nails, and the Fore-Feet being longer than the Hinder, and the Hinder being formed with a *Thumb* like a humane Hand ; seems very advantageous to this Animal, as to its way of living, and getting its Food : For what it seems to be most fond of, is, Poultry and Birds ; not but that it eats other things too. But for the Preying upon these, 'tis very nimble in climbing up Trees ; "*Scandit Arbores incredibili pernitate*, saith the *Mexican History* (c) ; and the same is confirmed by all. Now having the *Hinder-Feet* formed like an *Hand*, and the Four Fingers Armed with hooked Nails, it may take the better Hold in raising its Body up a Tree ; and the *Fore-Legs* being longer, will make the larger Stretch in Climbing up ; the *Nails* being hooked and strong, will take the greater Hold. Besides, as we shall observe, having the Advantage of twisting its *Tail* about any Stick or Bough it lights upon, and being able, by that Means, to suspend the whole Weight of its Body ; when it has a mind to raise it self to the Bough its *Tail* is twisted about, these Hinder-Legs, being formed like *Hands*, will the better take hold of it, than if they had no *Thumbs*.

These Fingers, *Toes*, or Claws were naked, without Hair ; the Skin looking of a Reddish Colour here. They were about an Inch long, and the *Thumbs* almost as long, but set lower, as I said. The *Palms* of all, especially if dilated, as it does in Climbing, were large ; but so contrived, as to be able to be contracted, as in walking ; but that they might here be better secured from Injury, I find at the setting on of each *Toe*, in the *Palms*, a Protuberant, Fleshy, and almost Cartilaginous Body.

In feeding its self, it makes use of the Fore Feet in bringing the Food to his Mouth, as do the *Monkey* and *Squirrel-Kind*.

As the *Toes*, so likewise the *Tail* was without Hair, only for a little Way near the setting on; and was most remarkable; being *tapering* from the Root towards the Tip, and covered with a regular Order of small Whitish Scales; which, for the most part, were all oblongish *Hexigens, Persimilis Colubrinæ*, saith the *Mexican History* (c): But with this difference, that in a *Snake's Skin* part of one *Scale* juts over another; but here each *Scale* appears wholly in view, and between each one may observe a little of the *Skin* or Membrane in which they are fixed. The Colour of these *Scales*, makes the *Tail* to appear Whitish, though the *Skin* seems of a Darker Colour.

As the *Feet* and *Tail*, so likewise the *Ears* were bare, and without Hair: *Auriculis tenuissimis, molliissimisq; ac penè translucentibus*, saith the *Mexican History* (c). And although thus soft and slender; and in Colour and Substance almost resembling the Membrane of a *Bat's Wing*, yet they were erect, not acuminate or running to a Point, as described by some; but, as in our *Icon* is represented, more of a *Circular* or *Oval Figure*: They were so slender and soft, that here I could not perceive that *Cartilaginous Body*, which usually is to be met with in the Structure of this Part, in most other Animals; but as if it was void almost of it, to be formed only by a Duplication of this tender Membrane or *Skin*; or if it did enjoy a *Cartilage*, as likely, 'twas much finer than in most other Animals. The *Concha* or Passage to the *Forus Auditorius* was very Capacious: But 'twas observed, that when our Subject began to grow ill, the Verge or Rime of the outward *Ear* seem'd to be crimp'd; and when it died, to be so thrivel'd, as if burnt up, not making a smooth, but jagged Edge.

The general Vogue of almost all *Naturalists*, resembling the *Face* and *Head* of this Animal, to that of a *Fox*,
would

would much incline me, could I find but a tollerable Agreement, to acquiesce herein: But by comparing both together, I see but very little Likeness. A *Fox*, 'tis true, has a large Forehead, and a slender *Rostrum*; but in a *Fox* it does not gradually grow Taper (as in our Subject, from the Ears to the Nose): But here the Forehead is Prominent, and somewhat Oval or Circular; then makes a remarkable Break; whence is protruded a slender *Rostrum*. I much more think, in this Particular, our Animal resembles that of a *Hog*: But Comparisons being so delusive, so unsatisfactory to an inquisitive Mind; and in all *Natural History* not meeting with more, and to so little purpose, as in the Description of this Animal; I should rather think it far more advisable, to avoid the seducing the Mind into an Error hereby; than at the same time, when 'tis pretended to inform, to misguide the Imagination by a mistaken and ill-chosen *Simile*.

I shall only add, that the *Upper-Jaw* was somewhat longer than the *Under*: The *Nostrils* were large; *Nares habet patentés*, saith *Margrave* (a): The *Eyes* Black, small, vivid and exerted, when alive; now dead, very much sunk: The *Neck* was short: The *Breast* was broad; and the Shape of the whole is best apprehended by consulting our *Figure* thereof.

It had *Mustacio's* like a *Cat*; *Barbam habet Felinam*, saith *Margrave* (a); but his *Picture* of it is very much mistaken. The *Fur* upon the Face is shorter and whiter than the rest of the Body: The *Mexico History* (c) describes it *Rostro tenui, proliso & depili*; but this must be only meant comparatively. On the Back and Sides the *Fur* was of an Ash Colour, or dappeld with Black Hair in Spots, intermixt with White, especially on the Back; on the Belly 'twas more of an Umber Colour, and of a darker on the Legs. The longest *Hairs*, which were

stronger and courser than the rest, measured Three Inches; being White towards the Ends: though the *Mexican History* saith the contrary. *Pilo longo & candido, sed circa extrema fusco & nigro*, saith *Hernandez (c)*. *Joh. Euseb. Nierembergius (d)*, in his *Figure* (which is much to be preferred before the others) represents him very Shockey, and, as it were, with Curled Hair. If what *Margrave* tells us be true, his Subject was different from ours; *Pili autem Capitis* (saith he (a)) *Colli inferius cum fine Ventræ & Caudæ inferius prope exortum, sunt flavi secundum longitudinem autem Capitis, per Oculos & medium Capitis tendit ampla nigra stria*. But the Colour of the *Fur* may vary in different Subjects.

But we will have now done with the *Outward* Parts, to proceed to the *Inward*: But that we must first of all take Notice of that most remarkable Part, that no other *Species* of Animals enjoys, as I know of, but this; that is neither *Inward*, nor *Outward*, but a *Medium* between both; I mean that admirable contrived *Pouch* or *Marsupium* that it has in the hinder *Belly*.

For at the Bottom of the *Belly*, in the middle, between the Two Hinder-Legs, we observed a *Slit* || or || *Tab. 1.*
Aperture, moderately extended about Two Inches long; *Fig. 2. and*
 capable of a larger Extension by dilating it with ones *Fig. 3.*
 Fingers, even when it is alive. *John Stadius (h)* saith, *in alvo fissuram habet ad dimidiæ Spithamæ longitudinem*: Or, as 'tis rendred by *Gesner (p)* *ad sex digitos fere scissum*: Possibly 'tis a little over stretcht; however, it can so exactly close and contract it, that the Eye does not readily discover it, till dilated by the Fingers. "*Bursæ os ita clauditur, ut non appareat, nisi duobus digitis ab invicem distendatur*, saith *Margrave (a)*. *Tantâ æqualitate & vi, ut coaluisse cutim omnino putes*, saith the *Mexican History (c)*.

This is so surprising a Structure, that all Zoographers do mention it with the greatest Admiration; and yet their Curiosity has not been so great, but several Mistakes they have been guilty of, in the Accounts they have given about it.

Mirum autem Animal (saith Margrave (a) *nam in infimo Ventre prope Crura posteriora Pellis ejus dupla est, & exterior rima duos & semis digitos longa, facitq; quasi Bursam, quem Brasiliiani vocant, Tambeio, Pomi Aurantii majoris capacem. Est autem Bursa hæc intus Pilosa.* All of this, I think, is very just and true: For at the Place he mentions, we observed an *Aperture*, or *Slit*, much of the Largeness he describes, where there is of each Side, a Reduplication of the Skin inwards, which forms a *Bag* of the Capacity he mentions, and of a greater upon Occasion, and Hairy too. But these Hairs here are so thinly set, that by no means they cover it, but almost every where you may observe the Skin.

Gul. Piso (b) has much the same Description, but calls this *Bursa*, *Mantica*. *Cardan* (x) calls it *Crumena*. *Oviedo* (k) calls it *Ventrale Marsupium*. By *Joh. de Laet* 'tis stiled, *Afcus sub Ventre pendulus* (z). By *Fr. Ximenez*, or his Translator (aa) *Pelliceus Saccus*. By *Jul. Cæs. Scaliger* (r), *Scortum subventrale*. By *Peter Martyr* (w), *Uterus Exterior*. By *Hieron. Benzon*. (y), *Venter alter*. By Captain *John Smith* (n) 'tis called a *Bag*. The Name we shall use for it, will be, the *Marsupium* or *Pouch*.

Herein all agree, that the use of this *Bag*, *Pouch*, or *Marsupium*, is for the *Preservation* of the Young Ones, and securing them upon any Occasion of Danger: Qua-

(z) Joh. de Laet. descrip. Indiæ Occident. lib. 13. cap. 5. p. 551.
(aa) Vide Joh. de Laet. ibid. lib. 5. cap. 4. p. 232.

ternos, quinosve parit Catulos (saith Hernandez (c) quos Utero conceptos, editosq; in lucem, Alvi Capacitate quadam, dum adhuc parvuli sunt, claudit ac servat. Peter Martyr (w) tells us, Quod natos sibi Catulos circumfert, quocunque profiscatur, Utero exteriori in modum magnæ Crumenæ dependente, &c. quo à venatoribus vel alijs à cæteris violentis ac rapacibus Animalibus natos liberet, illos secum asportando : nunquam autem illos emittere dicitur, nisi aut recreandi, vel laltandi Gratia, donec sibi victum per se queritare dedicerint. Ovidius (k) adds, Quod Bestia hæc ritu mustelarum noctu domos ingrediatur, necansq; Gallinas, earum sanguinem tantum modo sugat : imo illic Ventræ Marsupium aperit : filiosq; dimittit, ut & ipsi ad Gallinaceum sanguinem sorbendum assuescant : interim si aliquem strepetum senserit, illico natos in crumenam recipiens, fugam arripit. And Joh. Stadius (h) owns he has taken out the Young Ones hence ; Aliquoties easdem ipse venatus sum, & Catulos ex sinu ipsemet deprompsi. This Particular, I think, is evident by the Confession of all ; and therefore shall not use more Quotations to confirm it : And Nierembergius (d), on this Account, in his Picture of this Animal, represents the Young Ones as crawling out. But when they tell us, there is no other Uterus : But that the Fætus are formed here, and nourished here ; and this too, when they own they have dissected this Animal ; this is too great a Mistake to be longer Propagated, and from Autopsie we shall demonstrate the contrary, when we come to the Dissection.

But since the great and wise Design of Nature, in contriving this Part, is for the Preservation of the Young Ones, in receiving and emitting them as there is Occasion ; we will contemplate and admire the admirable Structure and Artifice she uses in forming and adopting it so suitably for this End.

We

We will therefore here remark the Structure of the *Muscles*, which, like Strings, do serve to open and shut this *Pouch*. But in the doing this, we must first describe those Two remarkable *Bones* this Animal has, more than is to be met with in any *Skeleton* besides, which are of great Use and Service herein : And, from their Office, I shall take leave to call them, *Ossa Marsupialia*, or *Janitores Marsupii*. I do not find they have been yet taken notice of by any ; and though they do belong to the *Skeleton*, yet I can't avoid their Description here, because of the *Muscles* that are inserted to them, that do serve to open the *Pouch*.

|| Tab. I.
Fig. 5.

† b.
= a. a.

* d. e.

|| d.

† e.

These *Ossa Marsupialia* || or *Janitores Marsupii* (as I call them) are Two strong *Bones*, so fastened to the upper and inward Edge of the *Ossa Pubis*, that at their *Basis* here, they touch'd one another, just at the Coalition † of the *Bones* that forms the *Ossa Pubis* =. The other Extreme of these *Bones* were so distant from one another, that it measured Two Inches and an Half. The *Basis* * of these *Bones*, where join'd to the *Ossa Pubis*, was half an Inch broad, having Two *Heads*; the larger || lying near the Coalition of the *Ossa Pubis*, and the lesser † towards the *Os Coxendicis*; having in the middle a *Sinus*, into which was received a Protuberance of the *Ossa Pubis*: By which Contrivance it appears, there can be no *Motion* of these *Bones*, nearer or farther from one another, but that they must stand always at an equal Distance. Nor did I, upon trial, find it otherwise ; but observed, they were capable of a small *Motion* inwards towards the *Spine*, and outwards from it. These *Bones*, as they ascended from the *Os Pubis*, grew slenderer, being about the Middle but a quarter of an Inch broad ; and they were each, Two Inches long.

To each of these *Bones* there were bestowed Four Pair of *Muscles* : There was another Pair that did run over them

them; to which these *Bones* did perform the Office of a *Trochlea*.

The *First Pair of Muscles* (i.e. which first came to be dissected, upon the Pronation of the Animal, and from its Figure, I shall call, *Triangularis*) arises Fleehy from the whole Length of the internal Side of these *Bones*, and inserted their opposite *Tendons* on each side of the *Rima*, or Aperture of the *Marsupium*. Under part of these *Muscles*, lay another, or a *Second Pair*; flat and thin; having their *Origin* from the upper Part of the internal Side of the *Ossa Marsupialia* and inserting their opposite *Tendons* a little above the *Tendons* of the former *Muscles*, the Tendency or Direction of the *Muscular Fibres* of this Pair, in Relation to the First, made a Decussation. The *Third Pair of Muscles* we shall take notice of, had their Rise from the Fore-part of the *Basis* of these *Bones*, where they were jointed to the *Os Pubis*; and were afterwards inserted into the *Linea Aspera* of the *Thigh-Bone*. The *Fourth Pair* did arise from the external Side of these *Bones* near the *Basis*, and are inserted into the Fore Part of the *Thigh-Bone* near the middle.

The *Last Pair of Muscles* I hinted at, (to which I thought these *Bones* might perform the Office of a *Trochlea*, or *Pully*) arises more immediately from the *Marsupium* or *Pouch* it self: For spreading their *Muscular Fibres* all over this *Bag*, as they issue from it, by joining their *Fibres* together; they more remarkably form a solid *Muscle*; which of each side passing over the middle of these *Bones*, (i. e. in the prone Posture we are dissecting it) at length were inserted into the Spine of the *Os Ilii*.

By considering the Structure of these *Muscles*, and what must be the Effect of their *Action* or Contraction; one cannot but think the *Two First* must serve towards the Dilatation or opening this *Marsupium* or *Pouch*: For these

these *Bones* are a *Fulciment* or *Basis*; their Articulation will not admit of a *Contraction* inwards or nearer to one another; wherefore, when the *First* and *Second* Pair of *Muscles* act or *contract*, they must necessarily *open* or dilate the Mouth of the *Marsupium* or *Pouch*. The *Third* and *Fourth* Pair of these *Muscles* may serve to *extend* these *Bones* outwards; so that when this Animal hangs by its *Tail* (as it does frequently) the *Weight* of the *Fetus* in this *Pouch* by this means will not press so much upon the inward *Viscera*. The *Fifth* and *Last* Pair, as they may serve to dilate the Capacity of the *Pouch* it self, so likewise may serve the better to suspend its *Weight*, when the Animal is *prono Capite*, and if it gravitates too much, they may retract it up, and the easier, because passing over these *Bones* like a *Pully*, their force is more augmented.

The *Antagonist* to these *Muscles* is, the *Sphincter Marsupii*; an oval *Series* of strong, fleshy *Fibres*, which serve to *constringe* and close the *Orifice* of the *Pouch*; which it does so perfectly (as I have already observed), that one would think the *Skin* here not to be *slit*; nor can the *Orifice* be observed till you have *dilated* it with your *Fingers*.

Nature's Contrivance therefore in placing this *Pouch* here, in this *Hinder* Part of the *Body*, is very great; her *Mechanisme* in forming these *Two Bones*, the *Janitores Marsupii*, which no *Skeleton* besides has, and so artfully furnishing them with these *Muscles*, is most admirable; that with the *Philosopher*, there is none but must own
Οὐδὲς γεωμετρεῖ.

The *Pouch* or *Marsupium* it self, was a *Membranous* *Body*, not very thick, tho' consisting of several *Coats*, and is to be reduced into the *Class* of the *Vesiculous* *Parts* of the *Body*; which according to my *Notion*, are part *Muscles*, part *Glands*, and do perform the *Office* of both,
Motion

Motion and Secretion : for the Concave or Hollow † of † *Tab. 1.*
 this *Pouch* (as I have remark'd) was somewhat Hairy; *Fig. 3.*
 and at several Places I could observe them matted or
 cling'd together by a *Yellowish Substance*, which did ouze
 out of the *Cutaneous Glands* there; as under the *Arm-*
pits in a Man, it is observed. *This Liquor* thus emptied
 into the *Pouch* from the *Glandulous Coat*, I found was
 strong *Scented*, and had more of the Peculiar *Factor* of
 this Animal, than any part besides; being no ways
 grateful, but unpleasant to the Smell, as has been obser-
 ved of this Creature, when alive : *Fætet Animal instar*
Vulpis vel Martis, saith *Margrave (a)*. *Vulpeculis Hi-*
spaniensibus sunt similes sed minores, & longe graveolenti-
ores, saith *Joh. de Laet (z)*. But after the *Skin* with
 the *Pouch* had been kept for some Days, and was grown
 dry, I found so great an Alteration here in the Smell,
 that what before was so disagreeable, now was become a
 perfect *Perfume*, and smelt altogether like *Musk*; which
 made me call to mind what formerly I had re-
 marked (*bb*) of these *Scent-Bags* in other Animals; that
 in a *Weasel*, which *Stinks* like a *Pole-cat*, by spreading
 this *Fæted Liquor* contained in the *Scent Bags* (as I call
 them) on a Paper, and so letting it dry, it became a
 grateful *Perfume*, &c. wherefore afterwards, in my De-
 scription and *Anatomy* of the *Tajacu(cc)* (a *Mexican Wild-*
Hog); when I came to dissect it, some Days after it had
 been dead; and the *Virus* or horred *Factor* of the *Liquor*
 contained in the *Scent-Bag* (which was a large *Gland* on
 the Back) had spent its self, and it became an agreeable
Perfume : Upon this Consideration, I took the Liberty
 (it may be, a too great an one) to call it *Moschiferus* ;

(*bb*) *Philos. Transact. No. 144. p. 39.* (*cc*) *Philosoph. Transact. No. 153.*
p. 379.

though the general Consent of all Authors had branded it with the Note of a *Fætid stinking* Animal. But at the same time, I instanced, that in the richest Perfumes we have, as *Musk*, *Civet*, and *Ambergriese*, the same is observed ; and that Passage I quoted in *Gul. Piso* (dd) concerning *Ambergriese*, is very remarkable.

Upon looking over this part of my Account of the *Tajacu*, I find this Passage (cc): “ And I am apt to think, “ ’twas by removing these *Scent-Bags*, rather than taking away the *Kidneys*, that they made the *Saragoy* “ edible ; which otherwise *stank* so much, that the “ Barbarous Nations refused them ; as out of *Lerius*, “ *Joh. Faber* (ee) takes notice. *Joh. Lerius* his Words are these, as he is printed in *Theodore de Bry* (ff) *alia etiam invenitur (Bestia) quam Saragoy appellant, quæ ob fætorem a Barbaris non comeditur, nos autem quibusdam excoriatis, & detractâ Renum pinguedine, unde fætor ille manebat, sine fastidio edimus, carne enim cum tenera, tum optima est.* And I find my Conjecture was not amiss ; for although then I knew not where this *Scent-Bag* was placed, yet now I find it was the *Marsupium*, or *Pouch* ; and that *Lerius* was altogether mistaken in attributing this *Fætor* to the *Kidneys*, or the *Fat* about them ; for I could not smell any thing ungrateful, or ill-scented there.

Upon this Occasion, I can’t but make a farther Remark upon the *Scent-Bag* of the *Musk-Deer* ; which is likewise placed in the Belly near the *Navil*, and makes a large Cod. *Lucas Schröckius* (gg) has wrote a distinct Treatise about it ; to whom I shall refer my Reader. But though there is this *Analogy* between our *Possum* and

(dd) De Indiæ utriusq; re Nat. & Med. lib. 1. p. m. 17. (ee) Histor. Mexican. p. 658. (ff) Americ. part tertia p. 180. (gg) Historia Moschi.

the *Musk-Deer*, that both have their *Scent-Bags* placed in the *Belly*, and they have an *Aperture* there; yet the grand *Use* of the *Pouch* of the *Possum* is very different, as we have already seen.

Having therefore mentioned the *Glandulous Coat* of the *Marsupium* (on whose Account it may be reckoned as a *Scent-Bag*) I must here take notice that it had likewise a *Muscular Coat*, besides those several other *Muscles* bestowed upon it, which we have observed already, that gave it Motion. It had likewise a *Vascular Coat* too, being plentifully irrigated with *Blood-Vessels*, especially by Two large *Branches* that came from the upper part of the *Thorax*, and might be reckoned the *Mammæ*, as they are sited in other Animals. This *Pouch* was fastened by several Membranes to the Muscles of the *Abdomen* and the Skin; but so as I could separate it for the most part, with my Fingers.

But here I find, in this *Marsupium* or *Pouch*, they place the *Mammæ* or *Teats*; and they tell very odd Stories about it: I will only relate what they say of it, and what I at present observed, or rather, did not observe.

Job. Petrus Maffei (e) makes this *Pouch*, not single, but double, he places the *Mammæ* here, and the Young Ones to be so fixt to them, as if they almost grew there. *Illud autem mirum in Cerigonibus, ex ejus alwo duæ dependent veluti Manticæ, in iis catulos circumfert, & quidem adeo pertinaciter suo quemq; Uteri affixos, ut a perpetuo suctu non avellantur, antequam ad pastum ipsi per se progredi valeant.* And much the same has *Casp. Barlæus* (f) *Cerigones* (saith he) *Vulpis magnitudine, insolito spectaculo alvum ostentant, è quâ duæ veluti Manticæ dependent, quibus catulos gestant, tam valido suctu Uteribus adhærentes, ut non antea demittunt, quàm adultiores ad pabulum ipsi excurrere valeant.* *Gul. Piso* (b) out does them both; for he makes them not only Nourished, but Formed here:

here : *Ex reiteratis* (saith he) *horum Animalium sectionibus alium non invenimus Uterum, præter hanc Bursam, in qua semen Concipitur & Catuli formantur. Quos deinde Quinos vel senos simul circumfert, mobiles, perfectos, sed depiles adeoq; pertinaciter Uberibus affixos, ut a perpetuo suctu vix avellantur, antequam permittente Matre ad pastum ipsi egrediuntur; unde redientes denuo, uterum materium pro lubitu ingrediuntur.* So *Joh. Stadius*, as I find him Printed in *Theodor de Bry* (bb) *In Alvo* (saith he) *fissuram habet ad dimidiæ spithamæ longitudinem, intra eam alia Cutis subest, nec enim alvus hiat aut fathiscit, in eo sinu sunt Ubra, quocunque obambulat proles secum gestat.* So likewise *Peter Bembus* (ii), writing of the new discovered Islands, saith, *Animal eæ sylvæ nutriunt Cuniculi magnitudine, Gallinis infestissimum, cujus quidem sæmina loculum habet e Pelle Utero annexum, quasi Uterum alterum sæcundum Uberibus, in quo Catulos secum gestat, emittitq; cum vult.* And our Country-man, *Captain Smith* (n) seems of this Opinion too; where he saith, *Under her Belly she hath a Bag, wherein she lodges, carrieth and suckleth her Young.* But *Gillius*, as he is quoted by *Gesner* (p), tells us, *That non ex receptaculo prodeunt, nisi cum lac sugunt.* So likewise *Vincent. Pinzonus* (u), *Nec unquam exeunt Crumenam, nisi quum sugunt;* which intimates, That the *Teats* are not placed here, since they must go out to suck.

I must confess, upon what Observation I could make, I did not find any *Teats* here; nor indeed did I find them in the outward Skin; as is usual in other *Multiparous* Animals. Possibly this Subject never had a *Litter*; so for want of *drawing*. they might be less; so as to escape

(bb) *Americ. Part Tertia. Joh. Stadii Hist. Brasilian. cap. 32. p. 129.*
(ii) *Hist. Venet. lib. 6.*

our *View*, for the present : But in another Subject, I doubt not but that they may be discovered.

But this *Bag* or *Pouch* is not only appropriated to the *Female*, as one would guess by what *P. Bembus* (*ii*) said before : But if we may believe *G. Piso* (*b*), the *Male* has one too : “ *Mas fæmellæ plane similis, &c.* (saith he) & *quod notatu dignum, manticam (licet a fæmellæ diversam) habet ; qua alternatis vicibus Catulos quoque circumfert ; sicut avis mas amore pullorum, fæmellam ab incubatu subinde liberans.*.. I could have wished he had given us an Account of the diversity of the *Pouch* in the *Male*, from that of the *Female* ; and had one an Opportunity of Dissecting a *Male*, it would much illustrate the *History* of this Animal. So likewise the Author of the *Present State* of his Majesty's Isles and Territories in *America*, (pag. 138.) tells us, That *the Male has such another Purse under his Belly, and takes his turn to carry the Young Ones, to ease the Female.* But more of the *Male*, when I shall come to mention the *Tai ibi*.

This Contrivance of Nature for securing the *Young Ones* from any Danger, till they are able to shift for themselves, I think, is not to be parallel'd in any *Species* of Animals, at least of the *Quadruped* Kind, besides. Not that she is wanting in abundantly providing for their *Preservation* ; but she pleases her self in using infinite *Variety* in attaining the same End. Nor is there wanting Instances enough to evince it : What most reaches, and comes up to our Subject is, what I find recorded in *Oppianus* (*kk*) in his excellent *Poem of Fishes* : For in his *Halieuticks*, describing the *Philostorgia* of *Fishes*, having mentioned the *Dolphin*, he comes to the *Dog-fish*, and tells us, that upon any Storm or Danger, if

(*kk*) Halieutic. lib. 1. ver. 332.

pursued, 'the *Young Ones* run into the *Mother's Belly* ; and when the Fright and Danger is over, they *come out* again. I shall not think much to transcribe his *Verses* ; which were so admired by *Antoninus*, the present *Emperor* of *Rome*, to whom he made the Dedication, that not only for them, he revoked the Banishment of his *Father* ; but presented *him* likewise with a *Golden Statera* for each Verse ; whence they are called *Golden Verses* : Which, according to *Suidas's* Computation, came to Twenty Thousand. *Suidas* (ll) his Words are these : 'Αναγνωθέντων δὲ τῶν ποιημάτων αὐτῷ ἑπὶ τῷ αὐτοκράτορι, ἐδώρησάτο αὐτῷ πρὸς ἓνα σίχον ἐν μέτρῳ, σελήρα χρυσῆν, ἣν γεν νόμισμα. ὡς λαβεῖν αὐτὸν ἑπὶ πᾶσι, νομισματικῷ μυριάδας εἰ.

And upon this Occasion, *Oppian* not only instances in the *Dog fish*, but in the *Squatina*, and *Glaucus* too : But there are different *Receptacles* he does assign, that these *Two latter* do make use of, for the receiving their *Young*, in Case of Danger. *Oppian's* (kk) Verses are these :

Ιχθύσι δ' αὖ δελφίς μὲν ἀρσέβει φιλότῃτι
 Παιδῶν· ὡς ἢ καὶ ἄλλοι ἐὼν γένῳ ἀμφιέπεισι.
 Θαῦμα δ' ἀλιπλάγκτοιο κυνὸς τόδε. τῇ γὰρ ἔποντο
 Τέκνα νεοβλαστῆ, καὶ σφιν σάκῳ ἐπλετο μήτηρ.
 Ἀλλ' ὅτε παρβήσῃσι, πᾶτ' ἀσπετα δείματ' ἔασιν
 Ἐν πόντῳ, τότε παῖδας ἐνὶ λαγόνεσσιν ἔδεκτο
 Αὐτίκ' εἰσέθμῳ, αὐτίκ' ὁδὸν, ἐνθεν ὀλισθόν
 Γενόμενοι. τοῖον δὲ πόνον μογέσασα περ ἔμπτῃς
 Ἀσπασίως τέτληκε, πάλιν δ' ὑπεχόδατο παῖδας
 Σπλάγχχοις· ἂψ δ' ἀνέγκαν, ὅτ' ἀμπνύσῃσι φέοισι.
 Τοίῳ καὶ ρίνη τεκῶν πορσύνει ἀλκυὺς,
 Ἀλλ' ἐκ ἐς νηδαὺ κείνη δύσις, οἷα κύνεσσιν·

Ἀλλὰ οἱ ἐν πλοῦρῃσιν ὑποσφάγες ἀμφοτέρωθεν
 Εἰσιν ὑπὸ πτέρυγων, οἷη γένις ἰχθύσιν ἄλλοις·
 Τῆσιν ἀτυζομένων, τεκνῶν φόβον ἀμφικαλύπτει.
 Ἄλλοι δ' αὖθ' ἐκ τέκνα διὰ σόμα παρβήσονται
 Δεξάμενοι ῥύονθ', ἅτ' ἐς δόμον ἢ ἐκελίην.
 Οἷον δὴ καὶ γλαῦκεθ', ὅς ἐξοχα τέκν' ἀγαπᾷ
 Πάντων, ὅσοι ἔασιν ἐν ἰχθύσιν ὠτοκῆες.
 Κεῖνε γὰρ μίμνει τε παρήμενεθ', ὄρεα γένωνθ'
 Παιῖδες ὑπὸ πλάτῃ, καὶ σφιν παρηνήκεθ' αἰεὶ.
 Τὸς δ' ὅτε κεν τερμένοντας ἰδῇ κρατερώτερον ἰκθυῖν,
 Ἀμφικανὼν κρατέετο κατὰ σόμα, μέσφα καὶ δαίμα
 Χάσσηθ'· τότε δ' αὖτις ἀνέπυσε λολυγνήθεν.

Which an ingenious Friend of mine has thus translated :
 And indeed, the whole *Poem* is so fine, so noble and
 rich a Thought; that if the *Translation* of it was at-
 tempted by some good *Genius*, he would find Charms
 enough in it to raise his Fancy; and a Subject Worthy
 his greatest Skill.

*None to their Young so kind as Dolphins are ;
 Tho' other Fish of theirs, express their Care.
 This in the Dog-fish, we with Wonder see ;
 To whom her trembling Whelps from Danger flee.
 For when a dreadful Storm imbroids the Deep,
 Within her Bowels, they for Refuge creep ;
 They pass directly to her Womb ; the Way
 By which excluded, first they saw the Day.
 She, tho' distended, and in torturing Pains,
 The bulky Burden patiently sustains,
 While the loud Terrors of the Tempest last :
 But when the Danger, and their Fears are past,
 Strait from her suff'ring Womb, the Whelps retreat,
 And she her Labour, they their Birth repeat.*

The

*The Squatina do's the same Love betray,
 As Dog-fish do, but in a different way.
 Nature has Bags on either side prepar'd
 Beneath her Gills; where she do's bide and guard
 Her frighted Young; with sudden Danger scar'd.* }

*Some thro' the Parent's gaping Throat descend;
 Whom as a House, or Nest, their Maws defend.
 The Glaucus, for Affection, is by none
 Of all the Fish Oviparous out-done.
 Close by her Spawn, she does unwearied stay,
 Her Offspring to protect from Fish of Prey.
 And when, with tender Fins, they strike the Tide,
 She with them swims, their constant Guard and Guide,
 For if it happens, that the trembling Fry
 Do some Voracious Enemy descry,
 Opening her Jaws, she kindly does devour
 Her Young; to save them from th' Invaders Power.
 Their Fears remov'd, she spues them up; to ease
 Her Labour, and restores them to the Seas.*

I must confess, I would not expect in a *Poet*, that Nicety and Exactness of *Natural History*, as in a *Philosopher*, who is not to give a loose to his Imagination, but truly to relate Matter of Fact. But this Particular of the *Dog-fish*, with me, bears the more Resemblance of Truth; for formerly, dissecting a *Fish* of this *Kind*, that was a *Female*; as it was surprising to me at the same time, to observe here the *gradual* Formation of several *Fetus*; some just beginning to be formed, others an Inch long or Two; others Four or Five; some Nine or Ten, and fit for Birth: So what comes most to our Business was, That near the *Exit* of the *Pudendum* of each side, I observed a *Foramen* or Hole that was capable

ble of Extension, and readily enough would admit my Finger, which led into the Cavity of the *Abdomen* or Belly it self; and not into any *Bag*, or the *Uterus*, or any other Part. *Besides*, in the *Abdomen* I found a Quantity of Water, which I could not but think was let in this Way. So that if upon Observation at any time, there should be found loose in the Cavity of the *Belly* of this Fish, a *Young* one; there would be no Reason to mistrust the Relation, since here are Two *Doors* to let them in and out.

Ælian (*mm*) relates the same Story of the *Dog-fish*; his Words, as they are translated by *P. Gillius*, are these; *Si quis eorum* (speaking of the Young Ones) *timeat, ingreditur rursus per Genitalia in Ventrem Matris; ubi timor abierit, is prodit tanquam rursus editus*. And in the preceding Chapter he tells the same (as our *Poet* does) of the *Glaucus*: And that Passage of *Zeza*, as 'tis quoted by the Learned *Conrad. Rittershusius* (*nn*) is very express: Γλαῦκος, κύων, ἢ γαλεός, θαλάττιοι ἰχθύες ἐπερχομένα δέμασιν τοῖς τάνοις τοῖς οἰκείοις, ὁ γλαῦκος μὲν ἢ γαλεός πᾶς εἰς οὐρανὸν συγκρέπτει, ὁ κύων δὲ κρύπτει ταῦτα πάλιν ἐν τῇ νηδύνι, καὶ πάλιν ταῦτα γεννᾷ τῷ φέρε παρελθόντι. Nay, *Aristotle* (*oo*) himself acknowledges the same thing of the *Galeus*, which is of the *Dog-Kind*: Ὅι μὲν ἐν ἄλλοις γαλεοὶ καὶ ἐξαριᾶσι καὶ δέχονται εἰς ἐαυτοὺς τὰς νεονίδας, ἢ αἰεῖναι, ἢ εἰ νάσκει. Which *Ful. Cæs. Scaliger* thus translates, *Cæterum Mustelorum genera & emittunt & admittunt intra se Catulos; item Squatinæ & Torpedines*. And the like he (*pp*) affirms of the *Dolphin* and *Porpois*: Κε εἰς δέχονται δὲ τὰ τέκνα μικρὰ ὄντα. But after all, if what is thus related of these *Fishes* should prove but a vulgar

(*mm*) Hist. Animal. l. 1. c. 18. (*nn*) Comment. in lib. 1. Halieut. p. m. 214. (*oo*) Hist. Animal lib. 6. cap. 8. p. 677. (*pp*) Hist. Animal. lib. 6. cap. 10. p. m. 682.

Error, 'tis one of a very *Ancient* Date; and it is high time it was removed: and if there should be any *Truth* in these Stories, for the gaining a greater Belief thereto, 'tis requisite that 'twas supported by some more *evident* Proof, and confirmed by *later* Observation. But what we mention of our *Quadruped*, the *Possum*, is notoriously known and agreed on of all Hands; to whom, after this Digression, (too large an one it may be) we shall now return; and shall therefore be more concise in the Description of the other *Parts*; and shall chiefly take Notice of those only, wherein I find something remarkable, and different from the common Make of the same *Parts* in other Animals.

And for this Reason I have very little to say of those *Parts* in the *Thorax*, I only observed, that the *Lungs* had Three *Lobes* on one side; and but One on the other: But this One, was as large as the other Three. They were soft and spongy, and easily dilated, and large proportionably to the Animal.

The *Heart* was included in a *Pericardium*, as usually; but the *Heart* it self I thought proportionably larger, in respect to the Bulk of the Body, than is commonly; nor was its *Cone* so sharp, but rather more obtuse. It had Two *Auricles*, and Two *Ventricles*.

About the *Throat* there were large *Glandulæ Maxillares*. The *Tongue* was a little above Three Inches Long, about Three Quarters of an Inch broad; 'twas rough, having several Protuberances, whose Points looked inwards. *Lingua longa* (saith) *Margravius* (a) *quam tamen os aperiens & morsum minitans non exserit, quamvis possit, sed versus posteriora attollit*. The *Voice* or Noise it made, was a little *Growling*.

But meeting, or at least not observing any thing farther extraordinary here, we shall hasten to the *Abdomen*,

where we shall find more Matter to excite our Admiration, and please our Curiosity.

The *Abdomen* or *Belly* was divided from the *Thorax* or *Breast*, by a large, strong, fleshy *Diaphragm*, for (as we shall observe in the *Skeleton*) the *Thorax* near the Throat was small; then gradually, as it descendeth, it enlarges its Capacity; so that here, where the *Diaphragm* was fastened, its Compass was very great and large; which might be rendred so the more, by reason it often hangs by its *Tail*; and when it does so, the *Viscera* in the *Abdomen* can't but press upon it. But that they might not too much, to the Injury of the Animal; we shall see what Provision Nature has made for it, by her great Contrivance in suspending the *Intestines*.

But we must observe and describe the † *Stomach*, or † *Ventricle*, which was seated under the *Diaphragm*, having part of the *Liver* lying over it; its Figure somewhat resembling the usual make, inclining to that of an *Half Moon*; as appeared by that Hairy ‖ *Tophus* we afterwards took out of it. But what was most remarkable was, the Structure and Position of the Two *Orifices*, (*viz.* that of the * *Gula*, that leads into it, and the *Pylo-* * *rus* †, that sends out) for they were both placed so near one another, that they seemed to touch or meet; and when I opened the *Stomach*, I found only a very slender *Isthmus*, or *Wall*, parted them. These *Orifices* were not at the Extrems of the *Stomach*, as usually; but inserted almost in the Middle of the upward Part, but more inclining towards that, that respects the ‖ *Duodenum*. The pouching or *bagging* † out at both Extrems, made it somewhat resemble (as I said) an *Half Moon*. The *Stomach* appeared but small, being much contracted, for it had not eaten any thing for some Days; it measured about Three Inches and an Half in length, and about

about Two Inches in depth: The *Gula* which conveys the Food into the *Stomach*, consisted of strong Muscular Fibres, and was in all about Nine Inches in Length. The *Pylorus*, that carries out, seem'd to have its Passage free and open, without that *annular* Constriction or *Valve*, as in most other Animals; though here we observed a larger Body of *Muscular* Fibres, than in the other *Intestines*; which made me wonder how a *Regurgitation* of the *Fæces* into the *Stomach* was prevented; but this we will consider anon.

But before we opened the *Stomach*, I observed at one Side a *Perforation* * or *Hole* thorough, about the Bigness of an ordinary *Pea*, and *Round*. That it was occasioned by an *Ulcer* there, I plainly perceived by the Lips or Edges; which were not fresh, but had an ulcerated *Matter* about them; and this, without doubt, was the Occasion of its Death; for it had fallen from its Food, and had pined away for some time before, and by its uneasy Motion, made its *Keeper* suspect, it had swallowed something that stuck in its *Throat*, or injured its *Stomach*.

A like Accident as this (as a *Perforation* of the *Stomach*) I have Three Times met with in dissecting *Human Bodies*; and the last (being joined with another *Physitian* in Consultation, a little before the *Patient's* Death) I foretold; and upon Dissection found confirmed. What appears to me, to be most likely to be the Cause of this *Perforation*, is, that some of the *Glands* in the *Stomach* (such as *Payerus* (qq) and Dr. *Grew* (rr) describes in the *Intestines*) being become *Scrophulous* or *Steatomatous*, might impostumate and so corrode the Coats of the *Stomach*, and cause a

(qq) Exercetat. Anat. Med. de Glandulis Intestlinorum. (rr) *Comparative Anatomy of Stomachs and Guts.*

Perforation. And the rather I am of this Opinion, because in those Instances I mentioned of *Human Bodies*, I found in other Places of the *Stomach*, these *Glands* very large and *Steatomatous*; tho' Naturally they are but small, and often not observed. Where there is a *Perforation* of the *Stomach* upon an *Inflammation*, and upon that an *Impostumation*; there the *Foramen* is larger and not regular: as remarkably I once met with it in a Child, where a large part of one side of the *Stomach* was *Sphacelated*. So likewise upon a *Corrosive Poison* taken, its Effects dilates its self more, and is not confined to so narrow a Compass; as I observed once in one who had taken *Rats-bane*.

Upon observing this *Perforation* of the *Stomach*, I looked to see, whether any of its *Contents* had been emptied into the Cavity of the *Abdomen*; but could find little or nothing: Nor indeed, when I came to open the *Stomach*, could I find any thing that could be evacuated that Way; for there was nothing contained in the *Stomach*, but a Body || of *Clotted Hair*, formed into the || Tab. 2.
Fig. 4. Shape and Figure of the *Stomach*, somewhat like an *Half Moon*; covered with a slimy viscid Substance, which did serve the better to glue these *Hairs* together. These *Hairy Tophi* are frequently to be met with, in the *Stomachs* of *Bruits*, and I have had, and seen several, which have been taken out of *Oxen*; and the *Butchers* inform me, that they chiefly meet with them in the *Winter Season*, after the *Hair* begins to shed; and the *Cattle* feed upon Hay and dry Meat: But after the *Spring*, and in *Summer*, they do more seldom find them; as if the *New Grass*, which Purges them, did contribute to dissolve these *Tophi* likewise. *Georg. Hieron. Velscius* has wrote Two *Medico Philosophical Dissertations* (ff) about

these *Tophi*, that are found in *Goats*; and others has made distinct *Treatises* thereon; to whom I refer the Curious: and *Gul. Piso* (tt) gives a Figure and Description of one.

But our Animal is *Carnivorous*, and in what all Accounts agree in, most *Rapacious* of the *Winged Kind*; and where it can't find its Prey on the *Land*, it will hunt for it in the *Trees*; most nimbly climbing them up: and if the tender Bough cannot bear the Weight of its Body on its Feet; by twisting its *Tail* about the Twig, it can hang thereby, and stretch it self the farther, to obtain its desired Food, or rob a Nest. Nay, if I am not mis-informed, by this Means it can *Fly*, or pass from one *Tree* to another, without descending down; for thus hanging by its *Tail*, and waving and swinging its Body like a *Pendulum*, it can fling it self into the Boughs of a Neighbouring *Tree*; where his Tail is sure to take fast hold of the first Bough it lights on, if otherwise it misses his *Footing*: and, as I have shewn, his hinder Legs being made like *Hands*, with a *Thumb*, it can more readily raise its Body up by them.

Noctambulum Animal est (saith de Laet (z) & cum cæteris *Avibus*, tum *Gallinis* infestissimum. Georg. Margrave (a) saith, *Mordax est, vescitur libenter Gallinis, quas rapit, ut Vulpes, & Arbores scandendo, avibus insidiatur, vescitur quoq; sacchari cannis, quibus sustentavi per quatuor septimanas in cubiculo meo.* So likewise *Gul. Piso* (b) *Mordaces sunt ut Vulpes earumq; more Gallinis & Columnis non solum, sed Avibus in fastigiis Arborum insidiantur; quarum defectu Cannis saccharis aliisq; optimis vegetabilibus vescuntur.* So that they are not only *Carnivorous*, but when need drives them, they can take up

(tt) Hist. Nat. & Med. lib. 5. p. 327.

with other *Food*. *Scandit Arbores incredibili pernecitate* (saith the *Mexican History* (c) *diu in Cavernis latitat, vescitur Cohortalibus, quas Vulpecularum, Mustelarumq; sylvestrium more, jugulat, illarum sanguinem absorbens*. And afterwards adds, *Vivit enim in Calidis, ac pascitur Carne, fructibus, Pone, Oleribus, frumentaceis, aliisq; generibus, veluti nos experimento cognovimus, alentes illud domi, ac in deliciis habentes*. Which last Account seems true; for this that we dissected would eat any thing, that was brought from the Table.

We shall now observe how the *Food*, when it is received into the *Stomach*, and contained there, till 'tis thoroughly digested, is afterwards dispensed with the greatest Advantage, for the Nourishment of this Creature. And what I hinted, how 'tis, that a *Regurgitation* of it into the *Stomach* again, is prevented; especially upon the Posture 'tis frequently in, when it hangs by its *Tail*, since (as I observed) the Passage at the *Pylorus* is so open and *patent*. And for the doing this, we must expect *Nature's* Contrivance (which is always admirable) to be great; not confining her self still to the same Rules; but is *Infinite* and *All wise*, in attaining the same *Ends*, with the greatest *Variety* and *Mechanism*.

Which leads me to consider the Structure and Order of the *Intestines*: But in doing this, I must first take Notice of the *Mesenterie*, that Membranous Part which colligates them, and fixes their Situation; and gives to them the Order of their Figure. For the *Intestines* are not just fastened to the *Peripherie* or outward Circumference of the *Mesenterie*; but the outward Membrane of the *Mesenterie* of both sides, is entirely projected and continued over the whole *Canalis*, or Duct, of the *Guts*; and is to them the outward or *common Membrane*: So that I have often, by separating this *outward* Membrane, from what lies under it, the *Muscular*; I have extracted
the

the whole length of the *Guts* ; leaving only the *Common Membrane*, as'tis continued from that of the *Mesenterie* ; which I could inflate, as if the whole of the *Guts* remained.

Now here we observed that remarkable Difference, from what is in many other Animals ; that we can't but make Two *Mesenteries* ; one peculiar to the *small Guts*, the other belonging to the *great ones*, or *Intestina Crassa*, as they are called ; for tho' continued to one another, yet the difference in their Figure or *Bulk*, is so much, that fully justifies the Distinction. And for Distinction sake, I shall call the former *Mesenterium* * *minorum*, and the latter *Mesenterium* † *Majorum*, sc. *Intestinorum* : for *minora* and *majora* I think more expressive, than *tenuia* and *crassa* ; at least it appeared so in our present Subject.

* Tab. 2.
Fig. 1. u.
† w.

|| f. f.

† f.
* r.

|| w.

For here I remarked, that as the || *Duodenum* descended from the *Stomach*, it ran under the † *Colon*, (just where 'tis joined to the *Cæcum* *) towards the Middle of the *Spine*. Hence I found a Projection of the first *Mesenterie* || into a *Spiral Line*, like a *Cochlea* or winding Pair of Stairs : So that upon Inflation, these *Intestines* here, made several *Convolutions*, or *Windings*, tho' not exactly *Spiral*, but as represented in our *Figure* ; and the better to shew the Currency of their *Canalis* here, and how those *Gyrations* follow each other ; I have signified it by the Order of the Letters of the *Alphabet* ; so that (g) is succeeded by (h) and (h) by (i) and so on : Not that I could represent the whole in this *Figure* ; for some of these *Gyræ*, at least great parts of them, lay dipt and hidden by others, that lay over them.

† w.

|| r. r.
* f.
† f. f. f.

The Second *Mesenterie* †, or *Mesenterium majorum*, as I choose rather to call it, than *Mesocolon* (for it did belong likewise to the *Cæcum* || and * *Rectum*, as well as the *Colon* †) was projected more in a *Plain* ; and made almost

most a *Circular Figure* at its *Peripherie*; so that the *Cæcum*, and *Colon* did almost entirely encircle the *small Guts*.

The *small Guts* (as here inflated) measured about Six Feet and an half in length. The *Cæcum* was about Six Inches long; and the *Colon* and *Rectum* Two Foot long. The Girth of the *Duodenum* (I mean all along here, as inflated) was Three Inches; the *Ileon* || Two In- || 7.
ches and an Half; the Girth of the *Cæcum*, in the largest Place, was Six Inches; of the *Colon* Four Inches; and the *Rectum* was Three Inches about. from the *Spine* to the utmost Projection of the *small Guts*, under the same Circumstance of *Inflation*, measured about Six Inches; the greatest *Diameter* that the *Colon* in this Circular Figure made, was somewhat above Seven Inches.

In the whole *Duct* or *Canalis* of the *Intestines*, I could not observe any *Valves*; no not at the *Cæcum* its self. 'Tis true, that the *Foramen* into the *Cæcum*, was a great deal less than the Capacity of the *Gut* its self; however, the Passage into it was so *open* and *wide*, as readily to receive or emit its Contents. For by pouring a large Quantity of Water into the *Stomach*, so as to wash out the *Fæces* contained in the *Intestines*; I found, that it would first run into the *Cæcum*, if it was not filled before, and then into the *Colon*, and as readily, upon elevating the *Colon*, it would pass thence, first into the *Cæcum*; and, when that was filled, into the *Ileon*.

Passing by other *Remarks* which I might make upon the *Glands* in the Inward Coat of the *Intestines*, upon the *Blood-Vessels* in the *Mesenteries*, &c. I shall now proceed to give my Thoughts upon the whole Structure and Figure of the *Intestines*, and how advantageously they are contrived for the *Uses* designed them by Nature.

For

For *First*, by means of these frequent *Gyrations* and windings of the *Intestines*, there is a greater Opportunity given to the *Separation* of the *Chyle* into the *Vasa Chylifera*; for the *Bore* of the *Intestines* being so large (as I have shewn) and there being no *Valves* in all their length; if there was not this Contrivance to give a *Lett*, or *Remora* to the hasty Descent of the *Fæces*, they would pass off so nimbly, that with them a great part of the *Chymous* Substance likewise, would be carried off: But the Length of the *Intestines* here, being so great; and as they run, making so many *Convolution*s, they do prevent this Danger.

Secondly, By means of this *Cochlea*, or *Spiral* Figure of the *first Mesenterie*, to which the *small Guts* are affixed, there may be prevented a *Regurgitation* of the Contents of the *Intestines* again into the Stomach, upon a Declivity of the Body of this Animal, as it is frequently in, when it hangs by its *Tail*. For tho', as I observed, the *Passage* from the *Stomach*, by the *Pylorus*, into the *Duodenum*, is large and open; yet in this Posture of the Body, there can't but be a *Reduplication*, or folding over of the *Duodenum*; since the great *Bulk* or *Wallet* of these *Intestines* must incline and swag towards the *Diaphragm*; by which *Reduplication*, the *Passage* at the *Pylorus* must, in a great measure, be occluded; and the *ascent* of the Contents now, be altogether as difficult and great, as when the Animal stands upon its Four Feet.

The *Reverse* of this Structure of the *Intestines* I found and have described in my Anatomy (cc) of the *Tajacu*, or the *Mexico Musk Hog*: for here the *Colon* made a *Spiral* Figure (as I have there represented, in *Tab. 1. Fig. 5.*) and the *small Guts* made a Plain. In our *Possum* the *small Guts* makes a *Spiral*, and the *Colon* and *great Guts* a Plain. But a *Spiral Convolution* of the *Intestines*

is to be met with in several Animals, tho' their Structure be different; as in the *Goat* and *Deer-Kind*; and very remarkably in a *Woodcock*.

But we will have done with the *Guts*, to proceed to other *Parts*; for their *Comparative Anatomy* is too large a Field, and would be too great a *Digression*, to engage in the Description of them in a *single Subject*.

The *Pancreas* was large, having one part (if I misremember not) running towards the *Spleen*, and the other down by the *Duodenum*.

The *Spleen* was Two Inches and half long, and One Inch in the broadest Part, and was of a dark Red Colour.

The *Liver* in this Animal was very large, of a bright Red Colour, consisting of Three *Lobes* †; Two of them † *Tab. 2.* were much larger than the third, which lay out of sight, *Fig. 5. B B B.* and was not to be seen, but upon inverting the *Liver*: and here we found not only at the *Edges* of one of the larger *Lobes*, deep *Incisures* *, which rendered it jagged; * *c c c* but also in the middle of the *Concave* part of the same *Lobe*, several deep *Fissures* †: Possibly for this Reason, † *d d d.* that so it might yield and give way the better when 'tis inverted, as 't is always, when this Animal hangs by its *Tail*. The *Bladder* * of *Gall* here was very large. The * *c.* Situation of the *Liver* and *Spleen* here, appeared as in other Animals.

In the *Urinary Parts* I did not observe any thing peculiar or different from the usual Structure, unless what we shall remark of the *Bladder* of *Urine*. The *Kidneys* || *Tab. 2.* of each side were a little above an Inch and half long, *Fig. 2. A A.* about three quarters of an Inch broad, and of the Figure almost of a Kidney-Bean. The *Emulgent* † Veins and Arte- † *b b.* ries * were very plainly seen: But on the inside of the *Kid-* * *c c.* *neys*, towards the upper Part, were placed the *Glandulæ Renales* ||, or *Renes Succenturiati*, as they are called by || *D D.* some,

some, and which were here very large, and of the same Colour with the *Kidneys* themselves, which was a deep Red; whereas these *Glandulæ Renales* in *Men* and other *Animals*, are usually of a White, Yellowish Colour.

* e e. The *Ureters* * were about five Inches and an half long, and were inserted into the Neck of the *Bladder* of *Urine*,
 || f. as is represented ||, first running under, then ascending up by the two Extrems of each *Uterus*, as they lie duplicated. The *Bladder* † of *Urine*, being inflated, was about the Bigness of a Hen's Egg and of that Figure. The
 † G. Neck of the *Bladder*, or *Urethra**, (which was about an
 * h. Inch long) lay over the *Vaginæ Uteri* †; and here the
 † ii. *Urethra* and the *Vaginæ Uteri* emptied themselves into one common *Canalis* * or *Passage*, which measured about
 * K. an Inch and half in length.

In most *Animals*, about the *Kidneys* there uses to be observed a large Body of *Fat* covering them, being contained in the *Membrana Adiposa*: But here we found four large protuberant *Lumps* of *Fat*, two of each side; two of them lying in the *Pelvis* of the *Abdomen*, near the *Bladder* of *Urine*, and the *Uterine* Parts; and the two others, between them and the *Kidneys*. Upon Examination, I found that they consisted of regular large *Laminae*; which were easily separable from one another, in broad Fleaks; so as I have not observed before; and indeed, before I had examined these *Lumps* of *Fat*, I could not tell well what to make of them; and I am apt to think, that these Two Bodies of *Fat*, near the *Uterus* are, what *Margrave* (a) and *Piso* (b) calls, *Testes sub Ano internis jacentes*; for, as I shall shew from themselves, in the *Mule*, the *Testes* are otherwise placed.

We shall proceed now to the Examination of the *Uterine* Parts: For 'tis so far from *Truth*, what is asserted by some, that it has no *Uterus* within, that here we find not only one, but two *Uteri*; and these too most

wonderfully contrived, and far different from the common Structure and Make of this Part, in other Animals. And the more too I wonder at this Mistake, since they pretended to have dissected them; for so Margrave (a), *Hæc Bursa* (speaking of the *Marsupium* or Pouch) *ipse Uterus est Animalis; nam alium non habet, uti ex sectione illius Comperi; in hac semen concipitur, & catuli formantur.* And so Piso (b), *Ex reiteratis horum Animalium Sectionibus, alium non invenimus Uterum præter hanc Bursam; in qua semen concipitur & Catuli formantur.* But notwithstanding what they talk of their dissecting them, there is not one Observation (as I know) of any one of the inward Parts, that they have given us. Hernandez (c) is more in the Right (and indeed his Account is much more to be valued, and more faithful in the whole, than any of the others) where he tells us, *Quaternos, quinosve parit Catulos, quos utero conceptos, editosq; in Lucem, Alvi capacitare quadam, dum adhuc parvuli sunt, claudit & servat.* We will therefore here take a Survey, and an Account of these Parts; and we find, that there are two *Ovaria*, two *Tubæ Fallopianæ*, two *Cornua Uteri*, two *Uteri*, and two *Vaginæ Uteri*.

The *Ovaria* || were placed one of each side, near the || *ss*. Extreams of the *Cornua Uteri*, being fastened to the *Alæ* * * *rrr*. *Uteri*, and were about the Bigness of a *Velch*. The *Vasæ Preparantia* (the *Arterie* † and the *Venie* || that did go † *nnn*. to and from them) were very plain, and as I have represented them; though the greatest part of these *Vessels* || *ooo*. were bestowed upon the *Cornua Uteri*. Near the *Ovaria*, I observed the *Fimbriæ* || *Foliaceæ*, and thence a Passage || *Tab. 2.* into the *Tubæ Fallopianæ* *. The *Tubæ Fallopianæ* * were *Fig. 3. b. b.* two fine slender *Canales* or *Ducts*, supported by the *Alæ* *Fig. 3. c. c.* *Uteri*, and running waving, and led into the Extreams of the *Cornua Uteri*. The *Cornua* † *Uteri*, being infla- † *Fig. 3. d. d.* ted, were about the Bigness of a Goose Quill, about an *Fig. 2. u. u.* Inch

Inch and half long, and were fastened to the *Alæ Uteri*, towards both Ends a little crooked, but where they pass into the *Uteri*, they were reflected inwards; at the other Extream reflected outwards. Their Substance seemed rather thicker than the *Uteri* themselves, and not so transparent, by reason of the numerous *Blood-Vessels* which irrigated them almost all over; for in the inside, both above and under, there ran the whole length of the *Cornua*, large Trunks of *Blood-Vessels*, sending from the Sides all along numerous Branches; which is very requisite: For in Animals that are *Multiparous*, as is our Subject, the *Litter* or *Fetus* do lie, and are formed in the *Cornua Uteri*. And I did here take Notice of some little Rifings of the inward Membrane of the *Cornua*, whereby they were somewhat divided into *Cells*; but very imperfectly: However, for the Nourishment and Formation of the *Embrio's* here, so great a Number of *Blood-Vessels* is highly necessary; and they were far more numerous here, than in the *Uteri* themselves. It has Four or Five Young Ones at a time; saith *Hernandez* (c). *Piso* (b) and *Joh. Stadius* saith, Five or Six. That which *Margrave* (a) observed, had Six. *Ralph Hamor* (l) and *Cardan* says, it has Seven. So *Joh. de Lact* saith Six or Seven. But *Jul. Cæs. Scaliger* (r) out-reckons them all; for he saith, *Fecundissima est, duodenes parit exiguos*: But this Account I do suspect.

These Two *Cornua* do empty themselves into the Two *Uteri**, just in the Middle, where they are conjoined together; and so outwardly seem to form, but as it were, one continued Body†; from this Conjunction, near the Neck of the *Bladder*, extending themselves on each side, and afterwards, being reflected to the Neck of the *Bladder* again, where they pass into the *Vagina Uteri*. But having extended this Part by Inflation, and so letting it dry, and then dissecting it; I observed a

* Fig. 3.

e e.

Fig. 2. x x.

† Fig. 3. e e.

Membrane || like a *Diaphragm*, perfectly to run cross, and intirely to divide them, near the insertion of the *Cornua*. || *Fig. 2. y.*
 into two distinct Bodies ; so that what is contained in the *Uterus* on the Right Side, can't pass into the *Uterus* on the Left Side, by means of this *Partition Wall* ; tho' outwardly (as I said) they both seemed, but as one continued Body.

I must confess, the *Fabrick* of this *Part*, seemed very surprising to me ; and such as I have not met with a *Parallel*, or the like, in any *Animal* besides ; at least of the *Quadrupede* Kind. 'Tis true, in *Lobsters* and *Crabs*, in the *Female* there are two *Uteri*, as in the *Male* there are two *Penes*, but more distinct and separated from one another. So two *Penes*, and each forked too, I have observed in the *Rattle-Snake* (*uu*) ; but how the *Male Possum* is provided, I cannot tell : But this I think is the only *Instance* of a *Land Quadrupede*, that has two *Uteri* ; and each of these too, seemingly *double*, by that *Reflection* they make, and by an imperfect *Diaphragm*, which divides the *Cavity* of each *Uterus* a considerable way, as we shall shew.

These *Uteri* are not fastened to the *Alæ*, as are the *Ovaria*, *Tubæ* and *Cornua* ; but where they are conjoin'd near the Insertion of the *Cornua*, they do adhere very firmly to the Neck * of the *Bladder*, not easily to be se- * *Fig. 3. l l.*
 parated thence ; and by *Membranes* to the *Rectum* ; where more separable. So that the Neck of the *Bladder* lies over that *Diaphragm* or *Membrane* which parted them (as I said) into two distinct *Uteri*. Here the Body of the *Uteri* seemed to be about the Bigness of the End of my Finger ; or in Compass (thus inflated) it measured about an Inch and three quarters : Hence they

were projected towards each side, and not according to the Length of the *Spine*, gradually enlarging the inward Cavity, as 'tis extended. For here about the *Angle of Reflection*, it measured in Compass two Inches and an Half. The *Uteri* being thus extended towards each side about the Space of an Inch and three quarters; and then reflected † back again, towards the Neck of the *Bladder*; and so pass into the two *Vaginae* ||, which lies under the *Urethra* *. From this *Angle of Reflection*, the Cavity of each *Uterus* gradually lessens, and is much smaller than the other part of the *Uterus*. The Capacity of each *Uterus* being the largest at the outward Elbow, where it begins to be reflected; for here it made, as 'twere, one *Common Cavity*, for almost the length of an Inch: But on the inside, I observed a *Membrane* † to be projected from the internal side of the *Uteri*, just from the Corner where the sides of the *Uteri* are doubled, whereby this Cavity is in part divided; and for this Reason, shall call this *Membrane*, the *Second*, or an imperfect *Diaphragm* of the *Uteri*.

Here in these *Uteri*, I observed Four large Trunks of *Blood-Vessels*, which did run the whole length of them, sending from their sides numerous Branches, and Ramifications all along. These Trunks were propagated from the *Hypogastrick* || and *Spermatic* * Vessels. I did also here observe in these *Uteri* (thus by Inflation extended and dried) several *Fasciculi* of *Muscular Fibres*, placed at a regular Distance from one another; which did run the whole Length of the *Uteri* likewise: by means of whose Contraction, the *Fetus* may be more easily forced out.

These two *Uteri* (as I mentioned) empty themselves into the two *Vaginae* †; for at this Extream, the *Uteri*, making a turn at the Neck of the *Bladder*, are continued thence into the two *Vaginae*, which lie just under the

† Fig. 3.
e e.

|| Fig. 2. ii.
* b.

† z.

|| p p p.
* n n n.
e o o.

† ii. Fig.
3. f.

the *Urethra**, or that *Passage* or Pipe which conveys the ^{* Fig. 2. b.} *Urine* from the *Bladder*, and are much of the same Length with that of the *Urethra*, which was about an Inch. Their Capacity was about the Bigness of a Wheat-Straw. Both these *Vaginae* and *Urethra* too, emptied themselves into a *Common Passage* ||, or *Canalis*, which || ^{K.} was as large as all the other Three; and about an Inch and half long: it looked Redish, by means of the numerous *Blood-Vessels* it enjoyed, and at last had its *Exit* so near the *Fundament*, that when alive, there was not observed any other *Foramen* outwardly, but that which led into the *Rectum*. But when I came to dissect it, by elevating the *Skin* here, which seemed to cover it, like a *Valve*; I observed the *Foramen* that led into this *Common Passage*, and putting a *Blow-pipe* into it, at the same time, by Inflation I extended the *Bladder* of *Urine*, and the *Uterine* Parts too; viz. The *Vaginae*, the *Uteri*, and the *Cornua*. So that in the *Skin* here, there was only one *Foramen* † † ^{† Tab. 1. Fig. 3. C.} for the *Exit* of the *Feces*, and the *Urine* and the *Fetus* too.

I have had no Opportunity of dissecting a *Male Possum*; and indeed, of none other but this *single* Subject: For had I, I might have been more exact in some Particulars; nor is it almost possible, to observe all in One.

The Account they give of the *Male*, is but very imperfect and short: *Mas Fœminæ per omnia similis, bene testiculatus*, saith *Margrave* (a) *In Bursa pendulos Testes, more Gati, gerens*. And much the same, saith *Piso* (b), *Mas Fœmelle planè similis, in Bursa pendulos, more Gati, testiculos fert*: But adds, *Et quod notatu dignum, Mantiscam (licet à Fœmelle diversam) habet quâ alternatis vicibus Catulos quoque circumfert*. I could wish he had given us, wherein 'twas different; and what kind of *Penis* the *Male* had.

The Ingenious and most Learned Mr. Ray (o) *Queries*, Whether the *Tai-ibi* of *Brafile*, described by *Margrave* (a); differs from our Subject, the *Possum*, only in Sex? Or, Whether 'tis another *Species* of Animal? And indeed, by a Passage in his Description of it, one would think, that *Margrave* did take the *Tai-ibi* to be only the *Male*. I will transcribe the whole *Paragraph*, it not being very long, that every one may have the Liberty of making their own Conjectures. *Tai-ibi Brasiliensibus*, (faith he) *Lusitanis Chachorro do mato, Belgis een Boschratte*: *Animal corpore tereti & oblongo. Totius corporis cum collo longitudo ab occipitio ad caudæ initium quatuordecim digitorum, crassities decem. Caput habet vulpino æmulum, ore acuto, barba felina: oculos conspicuos & prominentes, nigros: aures subrotundas, molles, graciles, albas, teneras ut charta mollis. Crura, pedes & digitos cum unguibus habet ut fœmella jam descripta, uti & caudam. Totum corpus vestitum est pilis albis splendentibus, qui in extremitatibus nigricant, & magis quidem in dorso, maxime tamen in cruribus: circa anum & initium caudæ pene nigricant. Os & aures albicant. Cauda in exortu ad quinque digitorum longitudinem pilis vestitur albis in extremitate nigricantibus, reliqua pars major ad finem usque cincta est corio tenui squamoso albicante instar exuviarum serpentis. Fætet graviter, caro tamen illius comeditur. Viçtitat libenter gallinis, ut vulpes. Pili inserti sunt tenui cuticulæ, quæ detrahi potest salvo manente corio crassiori. Testiculos propendentes habet ut felis mas.* Had *Margrave* mentioned in his Description, the *Marsupium* or *Pouch*, it had been more clear; but by the Account he gives, one cannot but think, that he makes the *Carigucya*, the *Female*, and the *Tai-ibi* the *Male* of the same *Species* of Animal. As they eat the *Tai-ibi*, so *Ralph Hamor* (l) tells us, that he has eaten the *Possum*, and that 'tis a grateful and wholesom *Food*.

Piso (b) having concluded his Description of the *Carrigeya*, adds, *In Indiis Orientalibus, idq; solum quantum hactenus constat in Amboina, similis Bestia frequens ad Fælis magnitudinem accedens, mactata ab incolis comeditur, si rite preparetur, nam alias sætet. Nomen illi Cous Cous inditum.* What Similitude this Beast may have with our Animal; or whether it is to be reckoned amongst the *Animalia Crumenata*, as *Scaliger* (r) calls them, I do not know. Our Animal seems to be properly a Native of *America*. *Richardus Dinothus* (as I find him quoted in *Aldrovandus* (a) saith *Veram horum Patriam Americam esse, præsertim Pervanis Regionibus.* So *Peter Martyr* (w), *Arbores in Pariana Regione ingentes sunt, inter quas repertum est animal, &c.* and then describes our *Possum*. That 'tis found in *Darien* and *Florida*, is asserted by *Nieremberg* (d); and in *New-Spain*, by *Cardan*, and others. That they are in the Isles of *Anguilla* and *Tabago*, is affirmed by the *Author* of the *Present State* of his Majesty's Isles and Territories in *America*, pag. 138, and pag. 250. And in *Virginia* they are frequently to be met with; as *Ralph Hamor* (l), *John de Laet* (m), *Captain John Smith* (n), and a great many others, tells us; and this that we dissected came from thence.

But not only in the *West*, but *South America* likewise, 'tis to be found: So *Petrus Maffei* (e) and *Caspar Barlaeus* (f) assures us, that they are in *Brafile*. Whether *Cardan* (i) was not mis-informed, when he tells us, that 'tis in *Æthiopia*; I do very much question; his Words are these: *Animal aliud mittit Æthiopia, parte anteriori vulpi persimile, Cauda & posteriore Cercopitheco, pedibus anterioribus humanis, auribus vespertilionis, quod crumenam habet sub Ventre, qua Catulos undiquaque gerit nec dimittit, nisi dum lactare vult.* What Authority he had for this, I do not know; but he owns too,
that

that they are in the *West-Indies*. *Nieremberg* (*d*) amongst the *Places* where this Animal is to be found, reckons likewise the *Molucca Islands*; which, if true, there may be something in what *Piso* (*b*) saith of *Amboina*, which is one of them. But I think it does deserve a farther Enquiry.

I shall proceed now to give a Description of the *Skeleton*, and so shall conclude.

We will begin therefore with the *Head*, which, from the End of the *Occiput*, to the Extream of the *Nares*, was Four Inches and Three Quarters long; of which the *Rostrum* † measured Three Inches; and just where the *Rostrum* and the *Cranium* || met, the Bones were so pinched in, at the Sides, that here, 'twas very narrow; and I may say, in Proportion to the Bulk of the Animal, this was the least *Cranium* that ever I met with in a *Quadrupede*. On the *Forehead*, the *Rostrum* was an Inch broad, having on each side, a *Protuberance** jutting out. There was a large *Suture* † just in the Middle, which divided the upper Bones of the *Nares* lengthways, and though they ran slender towards the Extream of the *Nares*; yet these Bones towards the *Forehead*, spread into a *Triangular* Figure, and as they are joined together, they form a *Rhomboide*, or a *Lozinge*. But I will not be particular in describing each *Bone*, that compose the *Head*; for fear of being tedious: But I cannot but take notice of that remarkable rising *Ridge* || like a *Crest*, that runs the length of the *Cranium*, from the *Forehead* to the *Occiput*, just in the Middle; where the *Sutura Sagittalis* is in other *Skuls*. This *Ridge*, for Distinction sake, I shall call, *Protuberantia Ossea longitudinalis*; and I observed, it jutting out from the *Cranium*, above a Quarter of an Inch: Just at its upper *Edge*, I could perceive a *Seam* like a *Suture*; so that though now, these

† Tab. I.
Fig. 4. AA.
|| b b

* i.

† K.

ccc.

Bones are so well united together, that they appeared as one entire Body ; yet in the *Fœtus*, without doubt, they are separable, and are Two. And this I rather think, because in the upper part of the *Cranium* I could not find any *Sutures* at all. So likewise answerable to the *Lam-doidal Suture*, may be those other *Ridges* in the Extream of the *Occiput*, which I shall call, *Protuberantie Ossæ Laterales* * ; which arising on each side from the * *d.* *Processus Styloides*, ascends obliquely up the hinder Part of the *Occiput* ; and just in the Middle at the Top, is joined with the *Longitudinal Ridge*, I have described. These *Ridges*, although as deep as the *first*, yet were not standing so upright, but projected rather like a *Pent-house*, over this hinder part of the *Cranium* ; by both which *Ridges*, the *Cranium* is so well guarded and defended, that 'tis almost impossible, the *Skull* should be any ways cracked or broken. Something like these *Ridges*, but nothing so large, I have observed in the *Skull* of a Weasel.

And not only the *Brain*, but the *Eyes* likewise, are very well guarded and defended, by the *Os Zygomaticum* † ; which is very broad and strong ; in the broad-† *e. f.* est Place being above Three Quarters of an Inch, and in the narrowest Half an Inch, being very thick on its under Edge ; but at its upper, growing thin and sharp. But for the greater Strengthening this *Bone* (which is formed by a *Process* from the *Os Temporum* ||, and another from the *Maxilla superior* *) where they meet, they * *e. f.* lap over one another, and so become the stronger. This *Os Zygomaticum* was Two Inches and an Half long, and standing off from the *Cranium* an Inch in Distance.

In the *Orbit* of the *Eye* at the inward *Canthus*, there was a large *Foramen* †, which led into the Cavity of the † *e.* *Nose*, and by a *Duct* placed here, the *Tears* or Moisture from the *Eyes* is conveyed into the *Nostrils*. In the upper

|| *b.* per *Jaw Bone* likewise, there was a large *Foramen* ||, which was for the Passage of some Vessels from the inward *Orbit* of the *Eye*.

† *b b.* The *Cranium* †, which encompass'd the *Brain*, in the largest Place, was about an Inch over; and about an Inch and Half in Length; but its Cavity jutt'd out somewhat farther towards the *Nares*, making as it were, a particular *Cell* here, and pretty capacious, for the receiving the *Processus Mamillares*, and that fore Part of the *Brain*. And afterwards I observed the *Os Cribriforme* very remarkably perforated with Holes, like a *Sieve*; and indeed, in forming this *Organ* of *Smelling*, Nature seems very careful and solicitous, the *Rostrum* making so great a part of the *Head*, that the *Cranium* it self seem'd very inconsiderable in respect to it, its inward Capacity containing not above the Quantity of a *Walnut*. Not having dissected the *Brain* (which I hope I may have hereafter an Opportunity to do) I will not at present, insist on the Description of the several *Foramina's* I observed on the inside, for the Passage of the *Nerves* and *Blood Vessels*. But, as I have shewn, since it has so little *Brains*, Nature hath been very kind to it, in preserving them, by the Defence of those *Prominent Bones* I have remarked, both length-ways and laterally behind; and on the Sides too, 'tis guarded by the *Temporal Process* † of the *Os Zygomaticum*.

† *e.*

The *Os Spongiosum* in each *Nostril*, seem'd very curiously contriv'd, by the abundance of *Laminæ* it enjoys; so that the *Membrane* that covers them, by this means, is render'd more Capacious, and capable of receiving more plentifully the *Effluvia's* of those Animals, it would either catch, or avoid; and in this *Sensory* 'tis known, that *Bruits* excel even *Man* himself, and their *Organ* is more adapted for it.

The *Under-Jaw* || consisted of Two strong *Bones*, joined together only at the *Mentum*; each measured Four Inches in Length. The *Head* of this *Bone* (which was Half an Inch broad) was received into a *Sinus* of the *Os Temporum*, and very firmly articulated there. It had Two *Processus*: the *Anterior* † or *Superior* is large and † *m.* thin, into which is inserted the *Temporal Muscle*. The *Inferior* * *Process* is smaller, and runs to a sharp Point: * *n.* Here at this *Process*, the Edge of the *Mandible* is so dilated, that it measured above Half an Inch. On the inside of the *Jaw* here, is a large *Sinus*, which leads to a *Foramen* that goes into the Body of the *Jaw-Bone*, and affords a Passage for the Vessels thither.

The Use of these *Bones* is for *Mastication*; which leads me to consider the *Teeth*. And here we find all the Three Sorts of them; for in the *Upper-Jaw* before, were Eight small *Dentes Incisores*, Four on each Side; then a void Space, almost a Quarter of an Inch; then Two large *Prominent Dentes Canini*, one of each Side; which jutted out of the *Jaw* about Half an Inch: these were succeeded of each Side, with Three *Dentes Incisores*; but these were much stronger and larger than the *Fore-Teeth*; and these imitated the *Dentes Molares*, in that they were inserted into the *Jaw-Bone* with Two *Phangs*: But the *Heads* of these *Incisores* were acuminated; whereas the *Heads* of the *Molares* were flat, and almost of a *Triangular Figure*. There were Four *Dentes Molares* of each Side: in all, Four and Twenty Teeth in the *Upper-Jaw*. But the double *Phangs* of the *Molares*, and the *Incisores Majores* were such, as at first sight, one would think them Two distinct *Teeth*; each *Phang* being inserted into a distinct *Alveolus*, or *Socket* in the *Jaw*, and remaining separated some way above the *Jaw Bone*, and only joined at the *Head*.

In the Under Jaw-Bone, there were likewise of each Side, Four *Dentes Incisores Minores* before; then a little void Space; after that, the *Dens Caninus*; then Three *Dentes Incisores Majores*; and last of all Four *Dentes Molares*, answerable to those in the Upper-Jaw, but somewhat smaller. In both Jaws in all, Eight and Forty Teeth. Georg Margravius's (a) Account I find is somewhat different from mine; for he saith, *Dentes (habet) instar felis seu Vulpis, antèrius nimirum tam superius, quàm inferius parvulos, hinc quatuor longos Caninos, superiores quidem longiores, inferiores breviores, hinc iterum sex alios, & dein Molares. Nimirum sedecim Molares, duodecim inter medios, quatuor Caninos, & incisores parvulos in inferiori mandibula octo, in superiori decem, nam duos majusculos in medio habet, more Leporis.*

But we will proceed next to what the Head is fastened to, the *Vertebræ*: and I find here, Seven *Vertebræ* of the Neck; Thirteen of the Back or *Thorax*; Six of the Loins; Three of the *Os Sacrum*; and Two and Twenty of the Tail; One and Fifty in all, and all extraordinarily contrived.

- † No. 1. The First *Vertebra* † of the Neck (to which the Head is fastened, and is therefore called the *Atlas*) had Two broad *transverse Processes*, but no *Spine*. The Second
- * 2. *Vertebra* * of the Neck, had a very large and thick
- || Tab. 2. *Spine* || of a Triangular Figure; and in it was observed a
- Fig. 6. b. large Semi-circular *Sinus* *, which was so deep, as to receive into its Bosom, a great part of the First *Vertebra*;
- * c. by which means, the *Articulation* was very much strengthened. This *Vertebra* is called *Dentata*, from that
- † d. *Tooth like Protuberance* † I have represented, and which is received into the Hollow of the First *Vertebra*, where the *Medulla Spinalis* runs. This *Vertebra* backwards,
- * e. had Two *Processus obliqui superiores* *, and Two *Oliqui*
- † f. *inferiores* †. The Third *Vertebra* of the Neck, had the same

same *Processes* || both before and behind ; but the *Spine* * || *Fig. 7.*
 here was about Three Quarters of an *Inch* in Height ; ^{e c. ff.}
 about the Third of an *Inch* thick ; and just at the Top
 seemed to be a little cleft. The *Fourth* and the *Fifth Verte-*
bra had the same *Processes*, as the *Third Vertebra* ; and
 the *Spine* here, likewise very thick, and cleft at the Top ;
 but gradually lessening in Height, as also Thickness.
 The *Sixth Vertebra*, besides the former *Processes*, had
 likewise an acute *Transverse* one, on each Side ; and its
Spine much shorter, and more acuminate than the former.
 The *Seventh Vertebra* of the Neck had only Two
oblique Processes before, and none behind ; and Two
acute transverse Processes, and a very short and sharp
Spine : So that upon holding up the *Head*, the *Spine*
 of the *First Vertebra* † of the *Thorax*, would touch the † *Tab. 1.*
 Top of the *Fifth Vertebra* of the Neck. These *Verte-* *Fig. 4. No. 8.*
bræ are so strongly and closely locked into one another,
 that though each of them are large in themselves ; yet,
 thus articulated, they do not make full Two Inches in
 Length. But What I most wondered at, was, to ob-
 serve the Thickness and Strength of the *Spines* of the
 Second, Third, Fourth and Fifth *Vertebræ*, far different
 from what I have observed in any other Animal ; and
 can't but think must be, for the better defending its self
 from the Injuries it might receive by any Fall ; and to
 perform much the same *Office*, as that *Prominent Bony*
Ridge in the *Cranium*. And not only here, but likewise
 the *Spines* of several of the *Vertebræ* of the *Thorax* and
Loins, I find are thus flatted, and broad at the Ends ;
 and they being so, should it happen to fall to the Ground,
 by Chance or Design ; these *Spines* being so Prominent
 and flat, will better bare off the Blow ; and upon this
 Account, there is no Danger of his breaking his *Neck*,
 his *Back*, or his *Head* ; since they are all Three so well
 secured and guarded.

The

The first Seven *Vertebræ* of the *Thorax*, have Two
 † *Tab. 2.* *oblique Processes* † forwards, which run under the
Fig. 8. b b. hinder *oblique Processes* of the preceding *Vertebra*; and
 * *c c.* have Two *oblique Processes* * backwards, which ride
 over those of the succeeding *Vertebra*; as likewise Two
 † *d d.* *transverse Processes* †, which at their Ends have small
 || *e e.* *Acetabula's* || or *Sinus's*, for the receiving the *Heads* of
 * *a.* the *Ribs*, which are fastened to them. The *Spines* * of
 these *Vertebræ*, are slender, thin, and sharp; about
 Three Quarters of an Inch long. The Six following
Vertebræ of the *Thorax*, have short, thick, and flat
Spines. The *oblique Processes* being continued on each
 Side of the *Spine*, make as 'twere, a Gutter; and the
transverse Processes here, are somewhat different from
 || *Tab. 2.* the former. The *Spines* || of the *Vertebræ* of the *Back*
Fig. 9. or *Loins*, the more they approached the *Os Sacrum*, so
 they lessened gradually in their Thickness on the Edge.
 † *b b. c c.* But here were double *oblique Processes* †, viz. Four at
 each End of the *Vertebra*, and the undermost spreading
 * *Tab. 1.* themselves out broad. The Three *Vertebræ* * of the *Os*
Fig. 4. *Sacrum*, are firmly fastened to the *Os Ilium* †; but the
No. 10. last not so entirely as the Two former: But this at each
 † *No. 13.* Side had a broad *transverse Process*, and the *Spines* of
 these were thin. The Two First *Vertebræ* * of the *Tail*
 * *No. 11.* had only One small acute *Spine*; but in all the other *Ver-*
tebræ of the *Tail*, both at the Head and Tail of each
Vertebra, I observed Two *Spines*; but those at the Head
 of the Joint, the larger. In the Six First *Vertebræ* of
 the *Tail*, there was, of each Side, a broad *transverse Pro-*
cess, the Length of the Joint: In the other *Vertebræ* on-
 ly at the Head and Tail, a jutting out at the Sides. The
Vertebræ about the Middle of the *Tail*, were the longest;
 being there about an Inch long; nearer the Root of the
Tail, and at the End not so long.

But what I was most of all pleas'd to see, and I think, is a wonderful Piece of *Nature's Mechanism*, was, those *Spines* † or *Hooks* placed in a Line, in the Middle of the † No. 12.
under Side of the *Vertebrae* of the *Tail*. 'Tis true, the 12.
first Three *Vertebrae* had none of these *Spines*, nor were they necessary here, since they lay within the Compass of the *Ossa Coxendicis*; but in all the other *Vertebrae*, to the End of the *Tail*, they were to be observed; but as they approached the Extream of the *Tail*, they grew lesser and shorter. These *Spines* || (where longest) were about || Tab. 2.
a Quarter of an Inch, or somewhat more: they were Fig. 10. bbb.
placed just at the Articulation of each *Joint*, and, as I said, in the Middle from the Sides; and seem'd to be articulated, both to the preceding and following *Vertebra*; not being an entire solid Body, but arising from the *Vertebra* with Two Legs or *Crura*, become afterwards perfectly united at the Ends. By this means, these *Bones* are rendred more firm and strong, and this *Hollow* * * c c.
serves for the transmitting the *Blood-Vessels* thorough them; and one may observe here a *Stria*, or Furrow, all the Length of the *Vertebra*, for the receiving them; whereby they are the better secured from Compression, when this Animal hangs by his *Tail*. And for the performing this Office, nothing, I think, could be more advantageously contriv'd: For when the *Tail* is twirl'd or wound about a Stick, this *Hook* of the *Spine* easily sustains the Weight, and there is but little Labour of the *Muscles* required, only enough for the bowing or crooking the *Tail*; for then, as by a *Hook*, the Weight of the whole Body is hereby suspended. And for the doing this, 'twas observed, that in each preceding *Vertebra*, there did a *Muscle* arise, which was insert'd on each side of the succeeding *Vertebra*; which Acting or Contracting, must necessarily bend and curve that *Joint*. But for the strengthening the whole, there was observed Four *Muscles*
to

to arise from the *Os Sacrum*, which did run the whole length of the *Tail*; Two on the upper Side, and Two on the under; sending each a *Tendon* to each *Internode* or *Vertebra*. So that when the *Skin* was stript off, the outward parts of these *Muscles* seemed to have *tendinous* Expansions over them, the whole Length of the *Tail*, and almost to be covered by them; which must needs very much contribute, and add Strength to the *Tail*; besides what may be the Effect of their Insertion of *Tendons* into each *Joint*, or *Vertebra*, in curling and unbending the *Tail*.

What Use this Animal makes of his *Tail*, when alive, and how advantageously 'tis contrived for that Purpose, we have sufficiently seen: But I find it is highly commended by *Hernandez* (c), as an extraordinary *Medicine* and *Specifick*; and from him, several others relate the same: I shall give you only his Words, and so proceed on to our *Skeleton*; *Cauda hujus Animalis* (saith he) *egregium est Medicamentum; trita enim drachmæ unius mensura, atq; ex aqua aliquoties devorata, nullo præassumpto alimento eo die quo hauritur, Urinæ meatus mire abstergit, eadem evocata, tractisq; lapillis, & quacunque alia re meatus obstruente. Venerem excitat, generat lac, ac per fractis medetur, & Cholicis, Partum accelerat, Menses elicit, extrahitq; tusa & imposita aculeos qui sunt infixi, ac ventrem emollit.* And concludes, *Et fortassis nullum extat Medicamentum ad has res omnes peragendas, præstantius.*

Tab. 2.
Fig. 4.
***.

To the *Vertebræ* of the *Thorax* are fastened the *Ribs*||, and there are Thirteen of each Side. The Seven foremost are more perfectly articulated with the *Sternum*; the Six succeeding may be reckoned in some Sense, *Costæ Nothæ*: For though they are long, and as they proceed from the *Vertebræ*, are inclined backwards, towards the hinder Legs; yet afterwards they are reflected

forwards towards the *Sternum* or *Cartilago Scutiformis*. But I must here take Notice, that though in *Man*, and other Animals, that Part of the *Ribs* that is fastened to the *Os Pectoris*, or *Sternum*, be usually *Cartilaginous*; yet here, in our Subject, I observed it to be all Bony throughout. However, this Difference I found, that the *Ribs* did look redder, by reason of the *Blood-Vessels* in them; and this Part was Whiter, and where it was fastened to the *Ribs*, one might plainly see; so that it may well pass for a *Bony Cartilage*; as often, the *Cartilages* do become *Bony*. The First *Rib* was only an Inch long, and its Bony *Cartilage* a Quarter of an Inch: hence gradually the *Ribs* increase in Length; for the Seventh *Rib* was Three Inches long; and its *Cartilage* One Inch and Half. The Four last of the *Costæ Nothæ*, gradually lessen again in Length; for the last *Rib* of all was only One Inch and Three Quarters long; and its *Cartilage* did not run Home to the *Os Pectoris*, or *Sternum*, though the First, Second and Third of the *Costæ Nothæ* did.

The *Os Pectoris*, or *Sternum*, consisted of Seven *Bones*, according to the Number of the *Fore-Ribs*, that are fastened to them. At the Beginning of the *Sternum*, there jutted out a sharp *Bony Cartilage*, which, from its Figure, I shall call, *Cartilago Ensisformis* †; and here † p. was fastened One Extream of the *Claviculæ* ||; at the End || o. of the *Sternum*, towards the *Belly*, there was a broad, roundish *Cartilage*, which therefore I shall call, *Cartilago Scutiformis* *. * ⦿

There were Two *Claviculæ* ||, or *Collar-Bones*, each an Inch and Half long; having one Extream fastened to the First *Bone* of the *Sternum*, or the *Cartilago Ensisformis*; and the other End to the *Spine* † of the *Scapula*, near † r. the Conjunction of it to the *Os Humeri*. By means of this *Bone*, it can more advantageously bring its *Fore-Foot* to

to its *Mouth* ; as it useto do when it feeds its self, as do the *Monkey-Kind*, who have *Claviculae* too as well as *Man* ; though many Animals want these *Bones*.

* q. The *Scapula* * or *Shoulder-Blade* was about Two Inches
 || r. long, about an Inch and Half broad ; its *Spine* ||, though thin, yet the nearer it approached the *Shoulder*, it grew larger and flatter. Into the *Sinus* of the *Neck* of the
 † Tab. I. *Scapula*, was received the *Head* † of the *Shoulder-Bone*,
 Fig. 6. a. or of the *Fore-Thigh-Bone* ; as to that Protuberance, called, the *Acromium*, was fastened the End of the *Clavicula*.

This *Thigh-Bone* of the *Fore-Legs* I found very remarkable ; so that I caused a *Figure* || to be made of it :
 || Tab. I. 'twas about Two Inches and Three Quarters long ; 'twas
 Fig. 6. thick and Strong, having a large rough *Spine* * jutting forward, and running Half the Length of it. The lower
 * b. Extream † of this *Thigh-Bone*, to which was fastened the *Tibia* and *Fibula*, grew very broad, being almost an Inch broad. Above, where this Bone began to grow
 † f. g. broad, on the out-side, was a large *Protuberance* || ; and on the Inside there was a great oblong *Foramen* *, or hollow Passage, formed by a small *Bone* arising from the inward Fore-Part of the *Thigh-Bone*, where it begins to grow larger, and was afterwards united to that part of
 || c. the *Basis* † of this *Bone*, where the *Fibula*, or *Minus*
 * d. *focile* is joined. Just in the Middle of the *Basis* of this *Bone*, there was a large *Sinus* || which backwards appeared deeper, which did lock into another deep *Sinus* of the *Tibia* ; by which means these *Bones* were so firmly articulated together, as they were not easily, if possibly, to be put out of *Joint*.

† T. T. The *Tibia* †, or *Focile majus*, was a strong *Bone*, a-
 || v. bout Three Inches long ; which was extended || upwards about a Quarter of an Inch above its Articulation with the *Thigh-Bone* ; and at the other End, was fastened to the outward *Bone* of the *Tarsus*. The

The *Fibula* *, or *Focile Minus*, was a smaller Bone, * w. w. placed more inward and forwarder, and not so long as the *Tibia* ; being articulated above (but not so firmly) with the *Thigh-Bone*, and below, with the inward Bone of the *Tarsus* †, having each a small *Sinus*, for the receiving † x x. the *Heads* of the Two *Fociles*. The *Bones* of the *Metatarsus* || were Four, or it may be Five; to which were || y y. joined the Five *Fingers* or *Toes* of the *Fore-Feet*. The innermost *Toe* had but Two Articulations, or Joints, but at the End had a large hooked strong *Nail*: The other Four *Fingers* had each, Three *Articuli* or *Joints*, armed with *Hooked Nails*, as the First.

The *Hinder-Legs* were fastened to the Trunk of the Body by the *Os Innominatum*; which, though properly here is but Two *Bones*, (*viz.* One of each Side) being separated above, by the *Os Sacrum*, and below, are joined together at the *Os Pubis*) yet commonly they do, for Distinction sake, give Three Names to each; as the uppermost Part of this Bone they call, the *Os Ilium* †; † No. 13. the lowermost, the *Os Ischii*, or *Coxendicis* ||; and the || Fig. 5. GG. fore Part, where the Coalition is, the *Os Pubis* *. The * I I. Length of the whole, in a straight Line, was Three Inches. In the *Os Ischii* was the *Acetabulum* †, being a † f f. large *Socket*, for the receiving the *Head* of the hinder *Thigh-Bone*; and deeper in, there was a Space for the fastening the *Ligament*; from which Space, there was a *Sinus* which led outward; so that the Brims of the *Acetabulum* was not an entire *Circle*, but broken off here. But the most remarkable *Bones* here, are, the *Ossa Marsupialia* *, *seu Janitores Marsupii*, of which I have given * c c. a Description before; therefore now shall proceed.

The *Hinder-Thigh-Bone* was a little above Three Inches long; 'twas roundish, and a strong Bone. But the *Tibia* †, † Tab. 1. or *Majus Focile* of the *Hinder-Leg*, was somewhat Fig. 4. TT. longer

|| w. w. longer, and a little curved. The *Fibula* ||, or *Minus Fo-*
cile, was about the same Length, straighter and slender-
 er : This, towards the *Foot*, was articulated to the *Os*
Calcis ; as the *Tibia* was to to the *Talus*, or *Astragalus* ;
 * x. x. and these Two *Bones* I make the *Tarsus* * ; and joining
 † y y. to them, were the *Bones* of the *Metatarsus* † ; and to these
 || z. the *Phalanges* || of the *Fingers* or *Toes*. In the innermost,
 or the *Thumb*, there were only Two *Articuli*, or *Bones* ;
 in the other Four *Toes*, or *Digiti*, in each there were
 Three *Articuli*, or *Joints*. The End of the *Thumb* was
 more flatted, than the Ends of the other *Toes* : For the
Thumb, as I have observed, had a *flat Nail*, like a *Hu-*
man Thumb ; in the others, the *Nails* were long, and
curved. I observed likewise, at the Articulation of each
Joint of the *Toes*, on the under Side, there were Two
 small *Bones*, that are called, *Ossa Sesamoidea*, and these,
 both in the *Fore* and *Hinder Feet*.

I am sensible how *tedious* I have been, in the *Descrip-*
tion of this *one* Animal, and from a *single* Observation
 too. Had I had more *Leasure* to have drawn it up in,
 I might have been much shorter. But it being an *Ani-*
mal, so very remarkable ; and one too, *sui Generis*, or a
 distinct *Species* from all others, I was the more inclin'd to
 be as particular as I could, though not so much as I could
 have wished. And I am the more confirmed in what I
 have formerly wished (ww) that for the perfecting a *Nat-*
ural History of *Animals*, we had a *distinct* Account and
Anatomy of some *One* of a *Species* : which, with a little
Variation, might serve for all of that *Family* : since I find
 so great a *Master* of *Natural History*, as Mr. Ray (xx),
 is of the same Opinion.

(ww) In my Preliminary Discourse concerning Anatomy, and a Natural History
 of Animals, before my Phocæna. (xx) Synopsis Animal. p. 324.

Since part of this Discourse was Printed off, I have met with a Passage in a *Treatise* of the *Bucaniers of America*, wrote first in *Dutch* by *John Equemeling*, and since translated into *Englilh* (yy), which I can't but take Notice of: And if true, (as the Author assures us, that he ^{(yy) pag. 49.} has seen it often) 'tis an Instance of a *Quadrupede*, which I knew not of before, that receives its *Young* into its *Belly*. But 'tis not a *Land*, but *Water* Animal; or it may be rather, one *Amphibious*, between both. 'Tis a sort of *Crocodile*, which he calls a *Cayman*; his Words are these, which I therefore repeat, that by farther Observation, if true, it might be confirmed; as also, it might be more particularly specified, whether their Entrance into the *Belly*, was by the *Mouth*, or any other Part. " Many times (saith he) their Eggs (for 'tis an Animal Oviparous) are destroyed by Birds, that find them out, as " they scrape amongst the Sands: Hereupon the Females " of the *Caymans*, at such times as they fear the coming " of any Flocks of Birds, do oft-times, by Night, swallow " these their Eggs, and keep them in their Stomach till " the Danger is over. And from time to time, they bury them again in the Sand, as I have told you, bringing them forth again out of their Belly, till the Season is come, of being excluded the Shell. At this time, if the Mother be nigh at hand, they run unto her, and play with her, as little Whelps would do with their Dams, sporting themselves according to their own Custom. In this sort of Sport, they will often times run in and out of their Mothers *Belly*, even as Rabbits into their Holes. This I have seen them do many times, as I have spied them at play with their Dam, over the Water, upon the contrary Banks of some River: at which time I have often disturbed their Sport, by throwing a Stone that way, causing them on a sudden to creep into the Mother's Bowels, for fear of some eminent Danger. The

T H E

EXPLANATION of the FIGURES.

TABULA PRIMA.

FIGURA PRIMA

R Represents the outward Shape and Figure of the Possum, drawn from the Life.

FIGURA SECUNDA

Represents the Slit or Aperture in the Belly that goes to the Marsupium or Pouch, where the Young Ones lodge, till they can shift for themselves.

FIGURA TERTIA.

A. Shews the Marsupium or Pouch turned the inside outwards, where may be observed the Hair or Fur that covers it, and may help the better to keep the Young Ones warm.

BB. The two hinder Legs cut off.

C. The Foramen of the Anus, which is also the common outward Vent or Exit to the Rectum, the Bladder of Urine, and the Uteri too.

D. The beginning of the Tail.

FIGURA QUARTA

Gives a View of the Skeleton or Bones of this Animal.

aa. The Rostrum or Snout.

bb. The Cranium or Skull that did contain the Brain.

ccc. A Bony Ridge or Protuberan-

tia Ossea longitudinalis, that did run the length of the Cranium, and over a part of the Rostrum.

d. The lateral Ridge, which, like a Penthouse, jutteth over the hinder part of the Cranium, Protuberantia Ossea Lateralis.

e.f. The Os Zygomaticum. (**e**) its Process from the Os Temporum, and (**f**) that from the Maxilla Superior, or Upper Jaw.

g. A Foramen or Hole in the inward Canthus of the Orbit of the Eye that leads into the Nostrils, and by a Duct conveys the Tears or Moisture of the Eyes into them.

h. A Foramen or Hole in the upper Jaw for a Passage to the Vessels.

i. A Protuberance of the Os Frontis.

k. A Suture of the Os Narium.

ll. The Lower Mandible or Jaw-bone. Maxilla inferior.

m. The Superior Process of the under Jaw.

n. The inferior Process of the under Jaw.

o. The Clavicula of one Side.

p. The Cartilago Ensigiformis of the first Bone of the Sternum.

q. The Scapula or Shoulder-Blade Bone.

A a

r. The

r. *The Spine of the Scapula.*
 SSSS. *The Thigh-Bones of all the Feet.*

TTTT. *The Tibia, or Focile majus of all the Feet.*

uu. *Part of the Tibia in the Fore-Legs, extended beyond the Articulation.*

ww.ww. *The Fibula or Focile minus in all the Legs.*

xxxx. *The Bones of the Tarsus.*

yy.yy. *The Bones of the Metatarsus.*

zzzz. *The Toes.*

aa. *The Thorns in the hinder Feet.*

No. 1. *The first Vertebra of the Neck called the Atlas.*

2, 3, 4, 5, 6, 7. *The second, third, fourth, fifth, sixth, and seventh Vertebra of the Neck.*

8. *The first Vertebra of the Thorax.*

9. *The first Vertebra of the Loins.*

10. *The first Vertebra of the Os Sacrum.*

11. *The first Vertebra of the Os Coxigis, or Tail.*

12, 12. 12. 12. *The Spines or Hooks on the inside of the Tail.*

13, 14. *The Os Innomiatum, where (13) is the Os Ilium, (14) the Os Ichi or Coxendicis.*

15, 15. *The Ossa Marsupialia, seu Janitores Marsupii.*

****. *The Ribs, thirteen in all.*

⊙. *The Cartilago Scutiformis.*

FIGURA QUINTA
Represents the Situation of the Ossa Marsupialia, &c.

aa. *The Ossa Pubis.*

b. *The Coalition or the joining of the Ossa Pubis.*

cc. *The two Ossa Marsupialia, or Janitores Marsupii.*

d, e. *The Basis of the Ossa Marsupialia, where joined to the Ossa Pubis, (d) the inward Head of the Basis, (e) the outward.*

ff. *The Acetabulum or Socket for receiving the Head of the Thigh Bone.*

g, g. *The Os Ileum.*

hh. *The Vertebrae of the Os sacrum.*

ll. *The Os Ichi or Coxendicis.*

FIGURA SEXTA

Exhibits the Figure of the fore side of the Thigh Bone of the fore Leg.

a. *The Head of the Thigh Bone, where 'tis fastened to the Scapula.*

b. *A large rough Spine, which runs above half the Length of this Thigh Bone.*

c. *A Protuberance of this Bone on the out side.*

d. *A large Foramen or hollow Passage.*

e. *A Sinus for receiving the Head of the Tibia.*

f, g. *The Basis or lower Extream of the Thigh Bone.*

TABULA SECUNDA.

FIGURA PRIMA

Represents the Stomach and Guts, and the several Coylings they make.

A. *The Gula or Gullet.*

B. *The Stomach.*

c. A

Fig. 2.

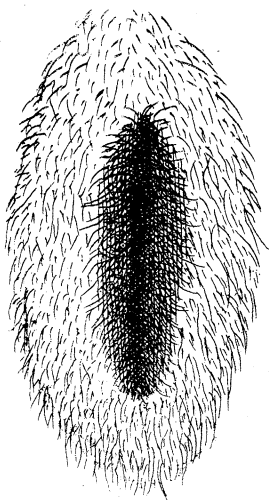
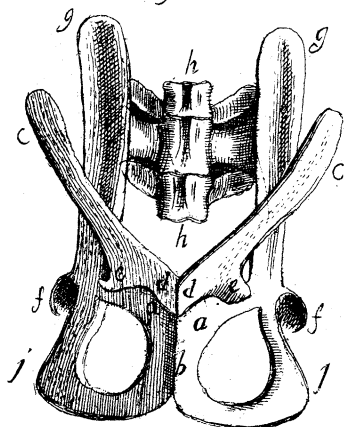


Fig 5.



Tab. 1

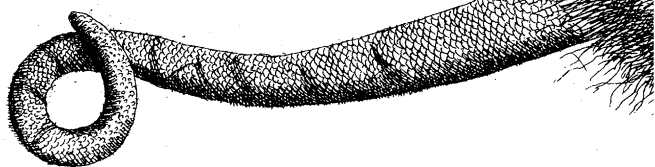


Fig. 3.

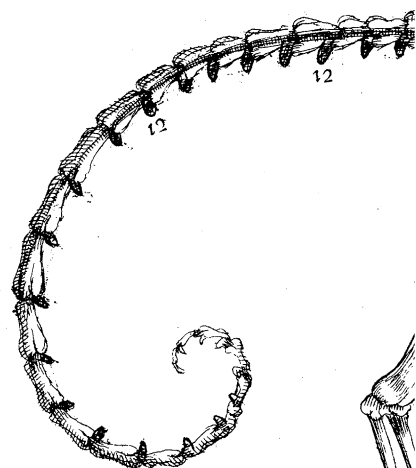
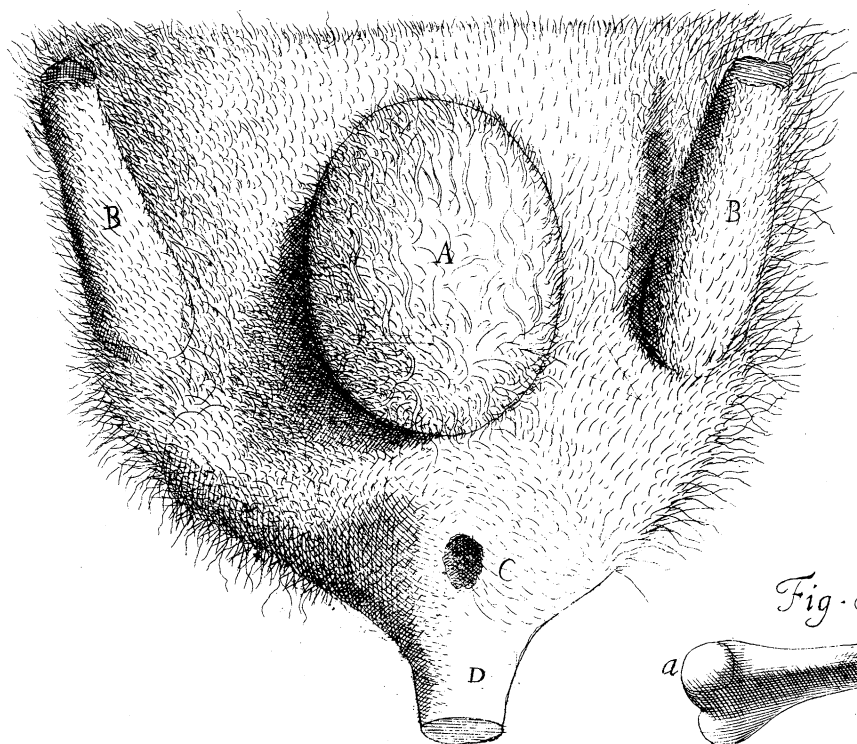
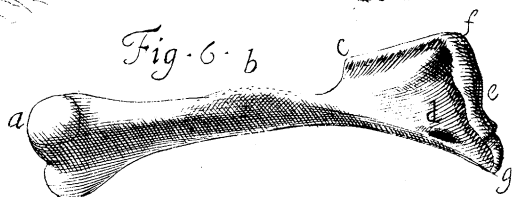


Fig. 6. b



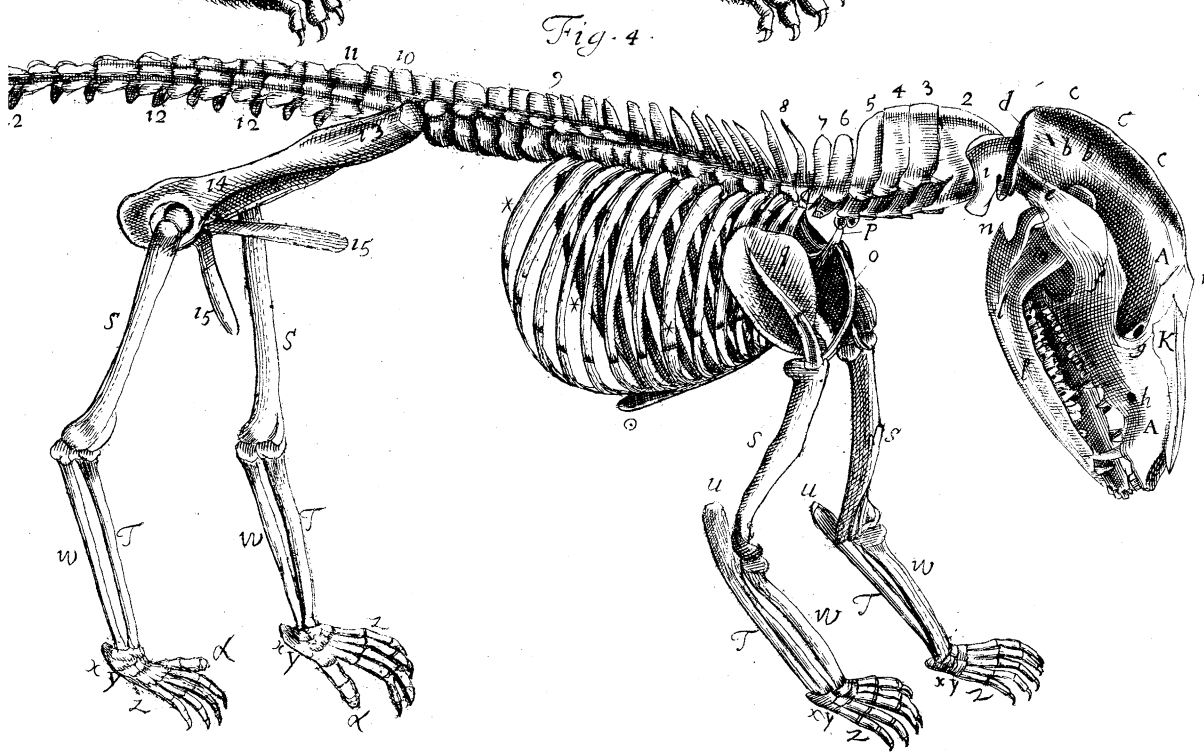


Fig. 3.

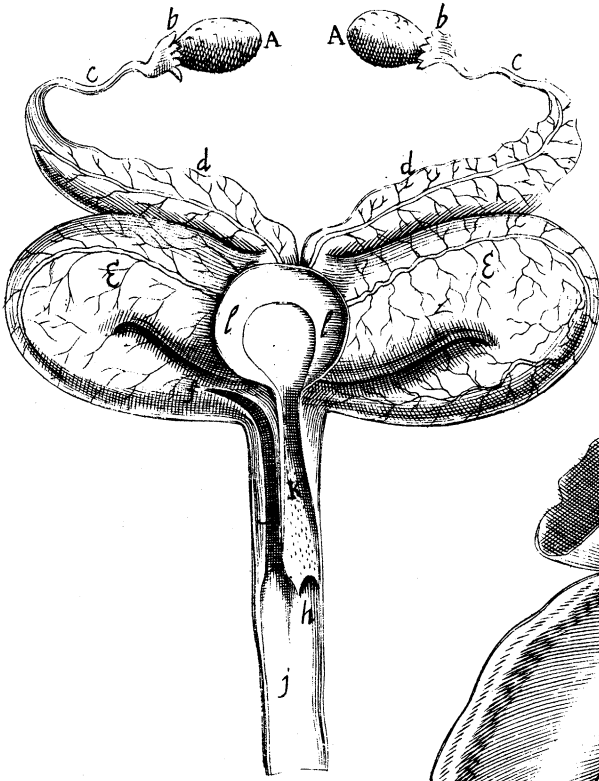


Fig. 4.



Tab. 2.



Fig. 5.

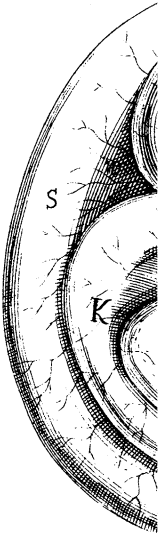
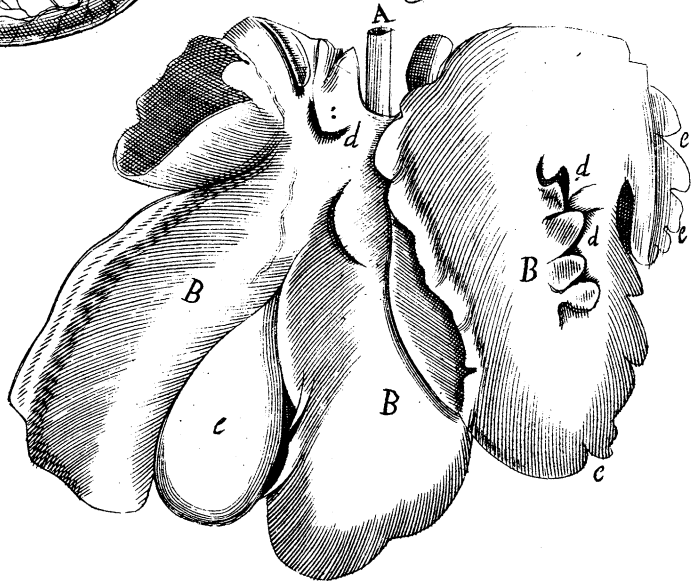


Fig. 6.

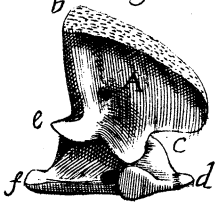


Fig. 7.

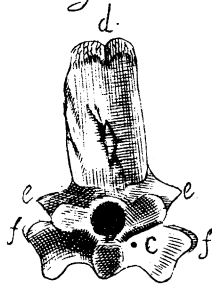


Fig. 8.

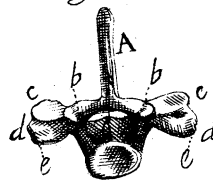


Fig. 9.

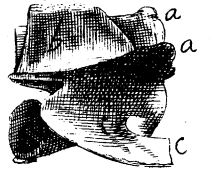


Fig. 1.

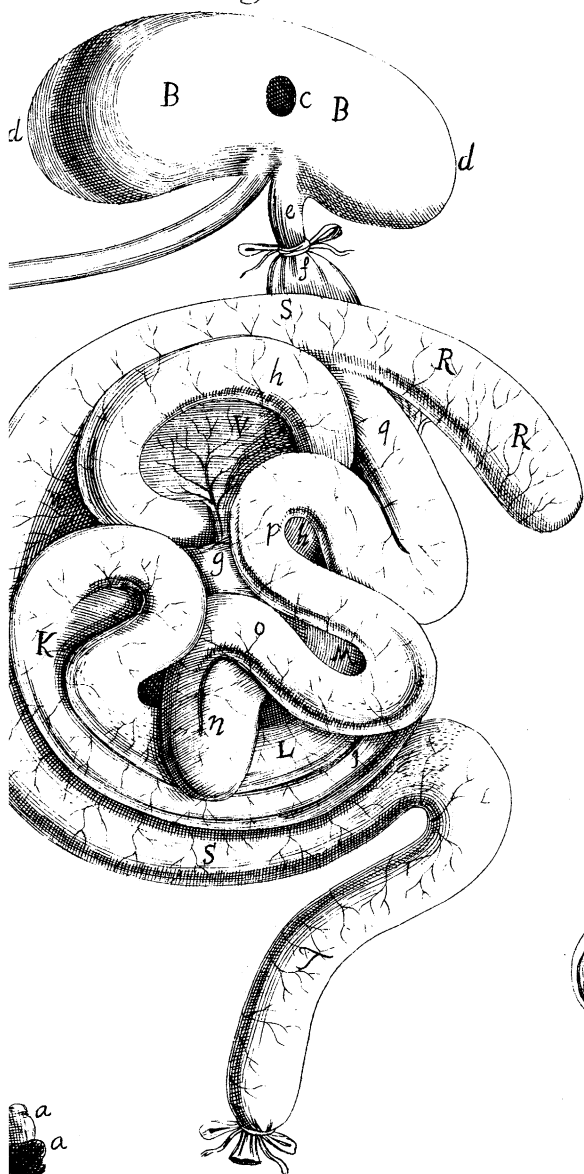


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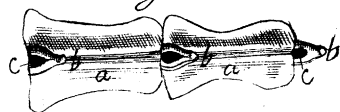
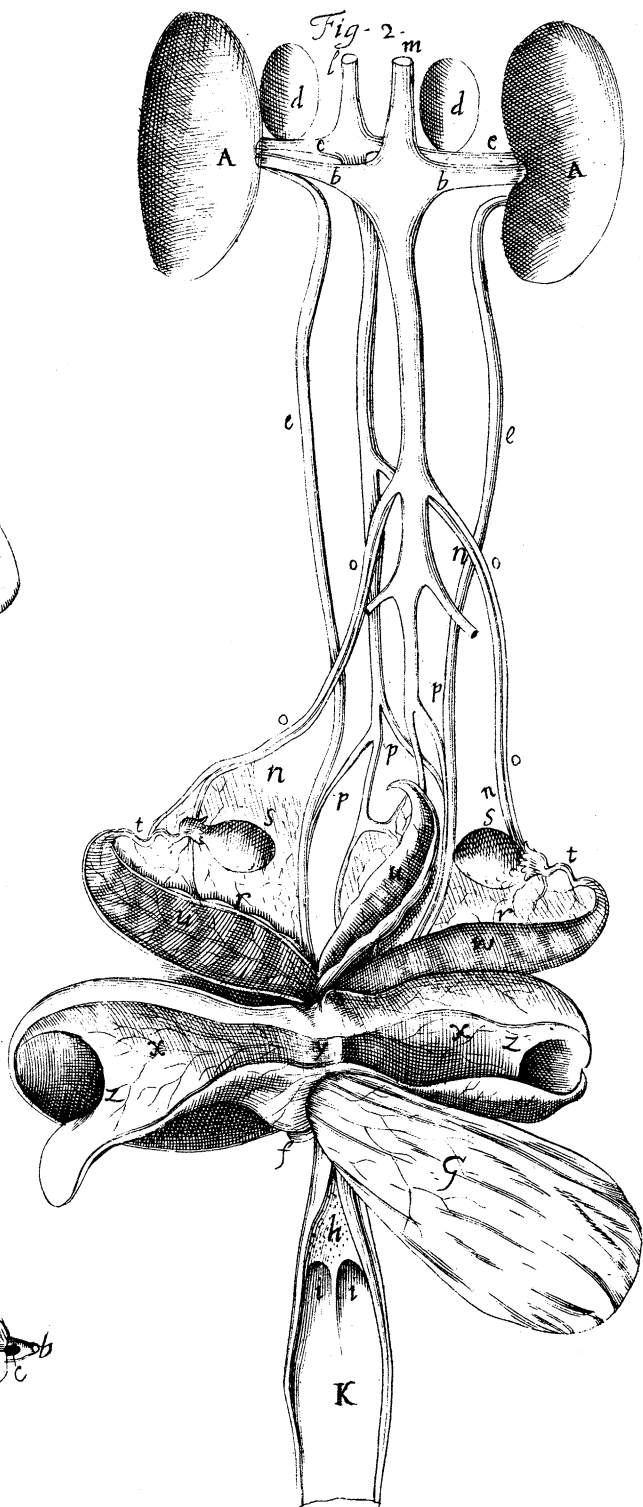


Fig. 2.



- c. *A Perforation of the Stomach, caused by an Ulcer there.*
 dd. *The two pouching out of the Stomach at the two Ends.*
 e. *The Pylorus.*
 f. *The beginning of the Duodenum.*
 g, h, i, k, l, m, n, o, p, q. *Represents the small Guts, and the Coyles and Convolutions they do make. Some of the Coyles lie hid, and out of sight; But the order how they follow one another, is signified by the Order of the Letters of the Alphabet: so that (g) follows (f), and (g) is succeeded by (i) and (i) by (k), and so on to (q) where the Ilion is dischargea and emptied into the Cæcum or, if that is full, into the Colon at the first Letter S.*
 RR. *The Cæcum.*
 SSS. *The Colon.*
 T. *The Rectum.*
 V. *The first Mesenterie, or Mesenterium minorum Intestinatorum*
 W. *The second Mesenterie, or Mesenterium majorum Intestinatorum.*
- FIGURA SECUNDA**
Exhibits the Urinary and the Uterine Parts.
 AA. *The two Kidneys.*
 bb. *The Emulgent Veins.*
 cc. *The Emulgent Arteries.*
 dd. *The Glandulæ Renales.*
 ee. *The two Ureters.*
 f. *The Insertion of the left Ureter, into the Neck of the Bladder.*
- G. *The Bladder of Urine turn'd aside*
 h. *The Urethra.*
 ii. *The two Vaginæ Uteri.*
 K. *The common Passage from the Urethra, and the two Vaginæ.*
 l. *The Arteria Aorta, or Great Arterie.*
 m. *The Vena Cava.*
 nn. n. *The Spermatick Arteries.*
 oo. oo. *The Spermatick Veins.*
 p. p. p. *The Hypogastick Arteries and Veins.*
 rrr. *The Alæ Uteri, seu potius Cornuum.*
 ss. *The Ovaria.*
 tt. *The Tubæ Fallopianæ.*
 uu. *The Cornu Uteri of the Left Side opened.*
 vv. *The Cornu Uteri of the Right Side not opened.*
 xx. *The two Uteri opened.*
 y. *The Diaphragm that divides the two Uteri.*
 zz. *The imperfect Diaphragma, which partly divides each Uterus, and lies over the Passage of that Part of the Uterus, which is doubled and tends to the Vaginæ.*
- FIGURA TERTIA**
More particularly shows the Uterine Parts.
 AA. *The two Ovaria.*
 bb. *The Fimbria Folicea.*
 cc. *The Tubæ Fallopianæ.*
 dd. *The two Cornua Uteri.*
 EE. *The two Uteri reduplicated*

f. *A Slit in the Neck of the Left Uterus to shew its Passage into the Vagina on that Side.*

g. *The Left Vagina opened.*

h. *The Ostium or Mouth of the Right Vagina.*

i. *The common Passage from the Urethra and Vagina.*

K. *The Urethra.*

ll. *The Bladder of Urine cut off.*

E I G U R A Q U A R T A

Represents the Hairy Tophus, or Ball of Hair that was taken out of the Stomach.

F I G U R A Q U I N T A

Represents the Liver.

A. *The Vena Cava.*

BBB. *The three Lobes of the Liver.*

C. *The Bladder of Gall.*

ddd. *The Fissures in the Body of the Liver.*

eee. *The Incisures at the Edges of the Liver.*

F I G U R A S E X T A.

A. *The Spine of the second Vertebra of the Neck.*

b. *Represents its Thickness.*

c. *A large Sinus for the receiving the first Vertebra.*

d. *The Dens or Tooth of this Vertebra.*

e. *The Processus obliquus superior of one Side.*

f. *The Processus obliquus inferior of the same Side.*

F I G U R A S E P T I M A.

A. *Represents the Spine of the third Vertebra of the Neck, where is shewn its natural thickness.*

b. *The Hole through which the Medulla*

Spinalis passes.

cc. *Two small Foramina for the Passage of Vessels.*

d. *Represents the Cleft at the top of the Spine.*

ee. *The two Processus obliqui Superiores before.*

ff. *The two Processus obliqui Inferiores before.*

F I G U R A O C T A V A

Represents the first Vertebra of the Thorax.

A. *The Spine, which is long and acute.*

bb. *The Oblique Processes before.*

cc. *The Oblique Processes behind.*

dd. *The Transverse Processes.*

ee. *Where the Ribs are fastened.*

f. *The Hollow where the Medulla Spinalis passes.*

F I G U R A N O N A

Represents the fourth Vertebra of the Loins.

aa. *The two upper Oblique Processes behind.*

b. *The Spine.*

cc. *The two under Oblique Processes behind.*

F I G U R A D E C I M A

Represents the second and third Vertebra of the Tail.

aa. *Two Vertebrae of the Tail.*

bbb. *The Spines or Hooks on the inside, by means of which, it can better hang by its Tail.*

cc. *A Hollow or Foramen in the middle of these Spines, through which, Blood-Vessels passes.*

E R R A T A.

P. 48. l. 105. l. 5. r. at Chirurgions. p. 105. l. 21. r. Simi-vulpa. p. 107. l. 26. r. Epithet. p. 108. l. 1. r. determined. l. 14. r. addidi. p. 109. l. 7. r. Crumenam. p. 110. l. 8. r. her. p. 112. l. 6. r. Hexagons. p. 113. l. 23. r. furc. p. 114. l. 32. r. invicem. p. 116. l. 5. r. proficatur. l. 10. r. queritare didicerint. l. 18. r. strepitum. l. penult. adapting. p. 125. l. 12. r. l.e. p. 133. l. 29. Columb. p. 140. l. 25. r. Vetch. l. 26. r. Vein. p. 146. l. 3. r. felis. p. 147. l. 10. r. Extream. l. 19. r. Suture. p. 148. l. 5. r. Lambdoidal. p. 149. l. 11. r. Seive. p. 151. l. 9. r. felis.

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Fig. 2.

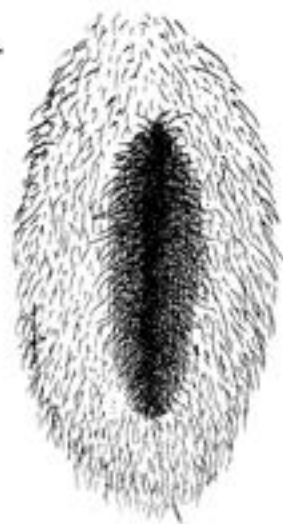
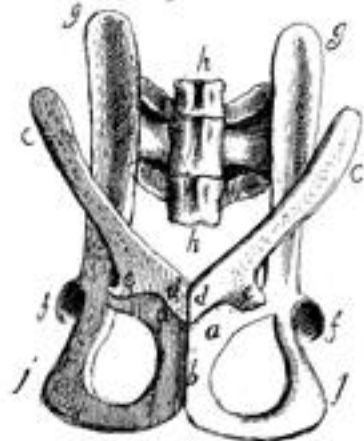


Fig. 5.



Tab. 1



Fig. 1.

Fig. 3.

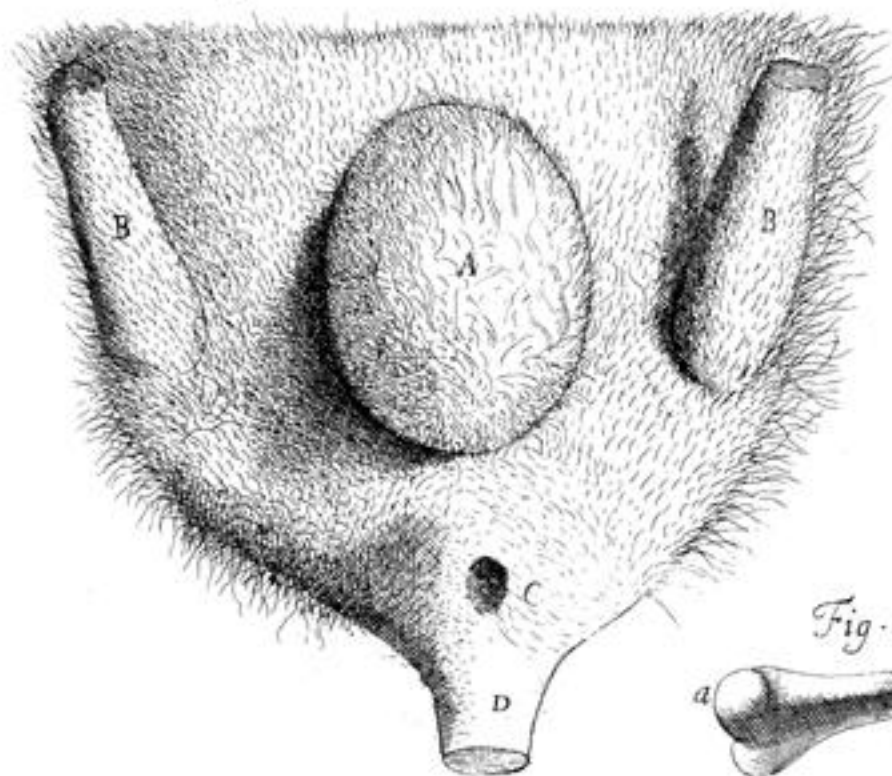
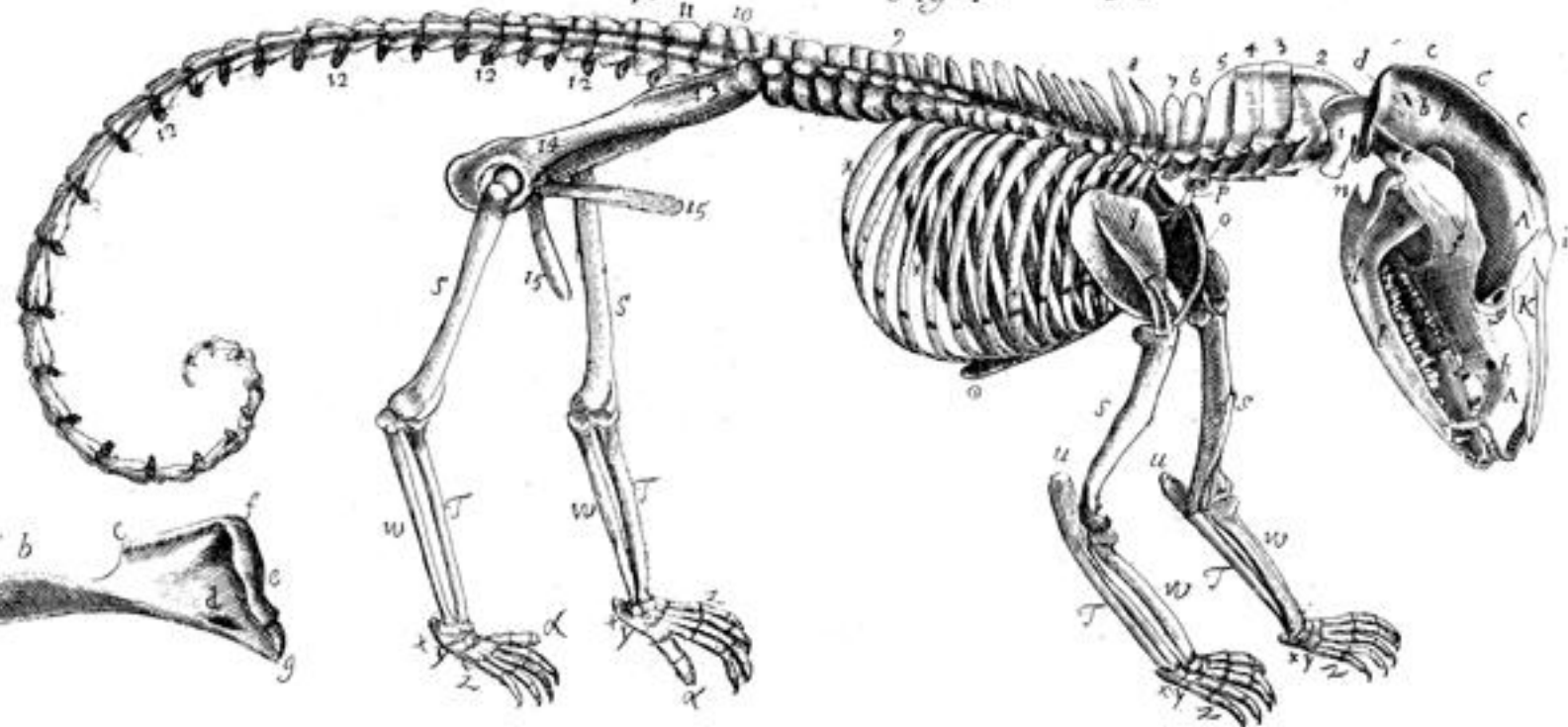
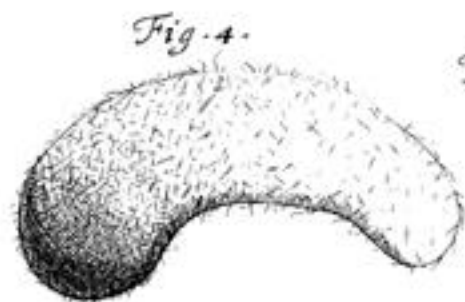
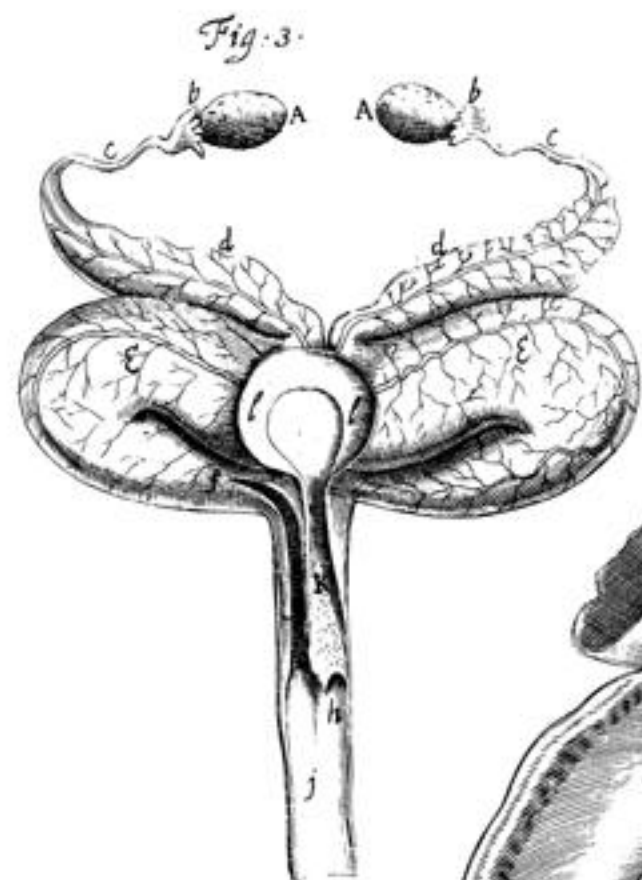


Fig. 6. b



Fig. 4.





Tab. 2.

